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**EDUCATIONAL DESIGN RESEARCH: DESIGNING A PROFESSIONAL
MASTER'S CURRICULUM FOR SENSORY INTEGRATION TRAINING WITHIN
THE SOUTH AFRICAN CONTEXT**

PhD Thesis

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DECLARATION

- (i) I, *Annamarie van Jaarsveld* declare that the doctoral research thesis entitled *EDUCATIONAL DESIGN RESEARCH: DESIGNING A PROFESSIONAL MASTER'S CURRICULUM FOR SENSORY INTEGRATION TRAINING WITHIN THE SOUTH AFRICAN CONTEXT*, that I have submitted at the University of the Free State, is my independent work and that I have not previously submitted it for a qualification at another institution of higher education.
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- (iii) I *Annamarie van Jaarsveld* hereby declare that all royalties as regards intellectual property that was developed during the course of and/or in connection with the study at the University of the Free State, will accrue to the University.



Annamarie van Jaarsveld

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SUMMARY

Sensory integration, as a field of specialisation, originated in the profession of occupational therapy. Successfully and purposefully engaging in the activities of everyday life depends partially on sensory integration.

Postgraduate training in sensory integration is highly sought after, both nationally and internationally. However, training aimed at achieving advanced competencies in sensory integration and advancing it as a specialist field in occupational therapy is currently not part of a higher education qualification in South Africa. The few available international training programmes, rooted in the work of Jean Ayres, the originator of sensory integration, are focused on foundational competencies of theory, assessment and intervention. At present, there are no advanced or contextualized training programmes relevant for developing countries such as South Africa.

The purpose of this study was to design a curriculum, relevant to the South African context but also internationally acknowledged, for a professional occupational therapy master's degree in sensory integration (M OT (SI)), designed to train occupational therapists with advanced competencies, able to meet the needs of all those individuals and their families who struggle with sensory integration difficulties and dysfunctions, whilst also adding to the extant body of knowledge in the field.

In the design of the curriculum, the candidate took an axiological stance, setting out to discover and/or confirm practical, real-world knowledge, offering advanced opportunities to attain the competencies needed to solve real-world problems in the field of sensory integration. Pragmatic knowledge needed to be created, and an epistemology of pragmatism was therefore followed using educational design research as a methodology.

Using the flexible and iterative features of this methodology, drawing mainly on qualitative methods but also on one strand of quantitative research, the candidate arrived at a final curriculum, ready for submission to the relevant institutional and statutory processes of

approval and accreditation. The research process included an analysis and exploration phase, comprising one micro-cycle, leading to a first skeleton prototype of the curriculum. Five objectives were set, including a data-generating activity involving international experts in the field of Ayres Sensory Integration (ASI®). The second and most comprehensive phase of the research process was the design and construction phase. This comprised three micro-cycles, each with its own aim and phase objectives. The data on the views and opinions of various stakeholders ensured contextual relevancy. Combining these with the data generated on the challenges and enablers of master students in occupational therapy, the candidate designed and constructed a further two evolving prototypes of the curriculum, culminating in prototype 3. Submitting this prototype once again to the views and opinions both of international experts in ASI® and of curriculum experts, allowed for conclusive refinement of the design, arriving at the final curriculum set as the aim of the study. Taking into account the 'unending' processes of institutional and statutory curriculum approval and accreditation, the candidate set a delimitation to the study, which was concluded with the final intended curriculum.

Throughout the design process, knowledge was created for future use. This was fed back into the ontological stance of the candidate as she searched for realistic knowledge that was context-appropriate. In writing up of the design process, she created and documented theoretical understandings in the form of the emerging design requirements and design propositions.

It is the candidate's hope that the curriculum, once delivered, will open up an additional, specialist career pathway for occupational therapists, advancing service delivery and expanding the knowledge base in the field. A further hope is that this study will raise awareness and cultivate the use of educational design research in the development of curriculums, especially in the profession of occupational therapy.

Key words: occupational therapy, sensory integration, curriculum, contextual relevancy, educational design research

OPSOMMING

Sensoriese integrasie, as 'n spesialiteitsrigting, het ontstaan in die beroepsveld van arbeidsterapie. Suksesvolle en doelgerigte betrokkenheid by aktiwiteite van die alledaagse lewe is gedeeltelik afhanklik van sensoriese integrasie.

Nagraadse opleiding in sensoriese integrasie is hoogs gesog, beide nasionaal en internasionaal. Opleiding wat daarop gemik is om gevorderde bevoegdheide in sensoriese integrasie te bekom en dit as spesialisveld in arbeidsterapie te bevorder, is egter nie huidiglik deel van 'n hoër-onderwyskwalifikasie in Suid-Afrika nie. Beperkte *beskikbare internasionale opleidingsprogramme wat geanker is in die werk van Jean Ayres, die outeur van sensoriese integrasie, is gefokus op fundamentele bevoegdheide van teorie, assessering en intervensie. Op die oomblik is daar geen gevorderde of gekontekstualiseerde opleidingsprogramme wat relevant is vir ontwikkelende lande soos Suid-Afrika nie.

Die doel van hierdie studie was om 'n kurrikulum te ontwerp wat relevant is vir die Suid-Afrikaanse konteks, maar ook internasionaal erken word as 'n professionele arbeidsterapie-meestersgraad in sensoriese integrasie (M OT (SI)), ontwerp om arbeidsterapeute op te lei met gevorderde bevoegdheide wat sal kan voldoen aan die behoeftes van al die individue en hul gesinne wat uitdagings beleef met sensoriese integrasieprobleme en disfunksies, en terselfdertyd ook bydra tot die bestaande kennis van die veld.

In die ontwerp van die kurrikulum het die kandidaat 'n aksiologiese houding ingeneem om die praktiese kennis van die wêreld te ontdek en/of te bevestig, wat gevorderde geleenthede bied om vaardighede te bekom wat nodig is om werklike-wêreld-probleme op die gebied van sensoriese integrasie op te los. Pragmatiese kennis moes geskep word, en 'n epistemologie van pragmatisme is nagevolg deur gebruik te maak van opvoedkundige ontwerpnavoring as 'n metodologie.

Die buigsame en iteratiewe kenmerke van hierdie metodologie is gebruik, en deur hoofsaaklik op kwalitatiewe metodes, maar ook een kwantitatiewe metode van navorsing te steun, was die kandidaat instaat om 'n finale kurrikulum te ontwerp wat gereed is vir voorlegging aan die betrokke institusionele en statutêre prosesse van goedkeuring en akkreditasie. Die navorsingsproses het 'n analise en eksplorasiefase ingesluit, bestaande uit 'n enkele mikro-siklus, wat gelei tot 'n eerste geraamte prototipe van die kurrikulum. Daar was vyf doelwitte gestel, insluitende 'n data-genererende aktiwiteit wat internasionale kundiges op die gebied van Ayres Sensoriese Integrasie® (ASI®) ingesluit het. Die tweede en mees omvattende fase van die navorsingsproses was die ontwerp- en konstruksiefase. Dit het bestaan uit drie mikro-siklusse, elk met sy eie doel en fase doelwitte. Die data oor die standpunte en menings van verskeie belanghebbendes het kontekstuele relevansie verseker. Deur hierdie data te kombineer met die data wat gegenereer was oor die uitdagings en moontlikhede van meesterstudente in arbeidsterapie, het die kandidaat 'n verdere twee ontwikkelende prototipes van die kurrikulum ontwerp en saamgestel, wat uitloop op prototipe 3. Hierdie prototipe was aan die standpunte en menings van internasionale kundiges in ASI® en kurrikulumdeskundiges blootgestel, wat toegelaat het vir beslissende afrondings om te kon eindig met die finale kurrikulum wat as doel van die studie gestel was. Met inagneming van die 'oneindige' prosesse van institusionele en statutêre kurrikulum goedkeuring en akkreditasie, het die kandidaat 'n afbakening gestel vir die studie, naamlik om met die finale beoogde kurrikulum die navorsingsproses af te sluit.

Kennis vir toekomstige gebruik is voortdurend tydens die ontwerpproses geskep. Dit het teruggevoer na die ontologiese stand van die kandidaat, aangesien sy gesoek het na realistiese kennis wat kontekstoepaslik was. Tydens die opskryf van die ontwerpproses het sy teoretiese begrippe geskep en gedokumenteer in die vorm van die ontluikende ontwerpvereistes en ontwerpvoorstelle.

Dit is die kandidaat se hoop dat die kurrikulum, sodra dit gelewer word, 'n addisionele, spesialisloopbaan roete vir arbeidsterapeute daar sal stel, wat dienslewering sal bevorder en die kennisbasis van die veld sal uitbrei. 'n Verdere hoop is dat hierdie studie

bewustheid sal kweek, en die gebruik van opvoedkundige ontwerpnavoring in die ontwikkeling van kurrikulums, veral in die beroep van arbeidsterapie, sal bevorder.

Sleutelwoorde: arbeidsterapie, sensoriese integrasie, kurrikulum, kontekstuele relevansie, opvoedkundige ontwerpnavoring

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LIST OF ACRONYMS

APDC	Academic Planning and Development Committee
ASI®	Ayres Sensory Integration®
CHE	Council on Higher Education
DIRAP	Directorate for Institutional Planning and Research
EASI	Evaluation for Ayres Sensory Integration
GAS	Goal Attainment Scaling
HEQC	Higher Education Quality Committee
HEQSF	Higher Education Qualifications Sub-Framework
HPCSA	Health Professions Council of South Africa
HSREC	Health Sciences Research Ethics Committee
ICEASI	International Council for Education in Ayres Sensory Integration
M OT(SI)	Professional Master's Degree with specialisation in Sensory Integration
MOT-SI	An occupational therapist who have successfully completed the M OT (SI) degree
NGOs	Non-governmental organizations
NQF	National Qualifications Framework
OT-SI	Occupational therapy services using a sensory integration approach
RPL	Recognition of Prior Learning
SAISI	South African Institute for Sensory Integration
SAQA	South African Qualifications Authority
SI	Sensory Integration
SIPT	Sensory Integration and Praxis Tests
USC	University of Southern California
WFOT	World Federation of Occupational Therapists
WIL	Work Integrated Learning
WPS	Western Psychological Services

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CHAPTER 1: ORIENTATION OF THE STUDY

This chapter serves as an introduction to the study. The position of the candidate is stated in terms of her field of research and profession, the context of the study is described, and the relevance and need for this research are argued. A short review is given of the literature that supported and provided foundational and core knowledge during this study. This offers a base of initial understanding of the literature involved in the study. The research question is stated, followed by the research aim and objectives, as well as the methodological considerations, leading to a summary of the methodology. An outline is given of the five chapters which comprise this thesis.

1.2 Context and justification of research

Globally, training in the field of sensory integration is regarded as a specialization area and a subfield within occupational therapy. Internationally, training in sensory integration is presented as part of formal, postgraduate qualifications, or as professional development by means of certification courses. Currently the only recognised university offering a master's degree in sensory integration is the University of Ulster in Northern Ireland (Ulster University, 2017). The University of Southern California (USC), in collaboration with Western Psychological Services (WPS), has for many years been regarded as the world leader in sensory integration training. WPS are the publishers of the SIPT, and since the 1970's they have collaboratively presented the USC/WPS Sensory Integration Certification Program (Baltazar Mori, et al., 2017, p. 10). The coursework, theory and intervention, as well as the administration and interpretation of the tests, are core components of sensory integration courses and of the qualification process. These sensory integration training courses are based on the ground-breaking work done by Jean Ayres between the 1960s and 1980s which has been trademarked as Ayres Sensory Integration (ASI®) (Smith Roley, Mailloux, Miller-Kuhaneck, & Glennon, 2007, p. CE1). The certification programme in the above-mentioned format was however discontinued in 2015, and in February 2016 USC announced that they would be presenting a new continuing education programme, the Sensory Integration Continuing

Education Certificate Program, in a revised format (USC Chan Sensory Integration Continuing Education (CE) Certificate Program, 2017) which does not include training in the use of the SIPT.

SAISI is currently the only organisation in South Africa offering training in ASI® theory, assessment and intervention at a national level. While SAISI is in the process of considering options to accredit and obtain South African Qualifications Authority (SAQA) registration on a postgraduate diploma level for their courses, there is currently no university that offers a programme in the same format. SAISI's courses are nationally and internationally acknowledged by professional bodies involved in training in sensory integration. The courses were originally aligned with USC/WPS courses, but since 2015 any updates in courses have been done in collaboration with a newly-formed international body, the International Council for Education in Ayres Sensory Integration (ICEASI). SAISI training courses consist of four courses; a theory course, a test administration course, a test interpretation course, and an intervention course. Each is presented over a period of five days, with a minimum of 35 hours contact time per course. Each has pre-course preparation and/or assessment activities relevant to the course, as well as self-study assignments. Practical work and assignments need to be successfully completed after the test administration, test interpretation and intervention courses. Courses are offered once a year, except when there are enough applicants to warrant a second course.

Training in sensory integration is highly sought after and is often set as a requirement for occupational therapists working in the paediatric field in South Africa. However, specialist sensory integration training, aimed at expanding knowledge of sensory integration and advancing it as a specialist field in occupational therapy, is currently not part of a higher education programme in South Africa.

The hard truth in South Africa is that, because of the cost involved in sensory integration training, the majority of occupational therapists (70%) who have completed the SAISI training courses are from the private sector, while only 12% are from the public sector

(South African Institute for Sensory Integration, 2014). In addition, the cost involved in the assessment of a child using an instrument like the SIPT, which is the golden standard in identifying children with sensory integration difficulties (Smith Roley, 2006 (a), p. 25) narrows the treatment of sensory integration primarily to the private sector, as very few public health institutions can afford the use of the SIPT. This is one of the realities of third-world countries and has direct implications for this study. According to two sources providing information on health care in South Africa (Statistics South Africa, 2015, p. 29; Angloinfo, 2014) only a minority (about 20 %) of the population have access to private health care and thus to “gold standard” assessment and treatment. Statistics presented in the “Draft Human Resources Strategy for the Health Sector: 2012/13 – 2016/17” (2011, p. 35) indicate that the private health care sector services about 35% of the South African population. The reality comes to the foreground when it is realised that the majority of children (and/or adolescents and adults) in South Africa who are experiencing sensory integration difficulties will most probably never be able to afford sensory integration assessment and intervention. This could have a negative impact on foundational functional and academic skills such as, among others, reading and writing (Schaaf, Schoen, Smith-Roley, Lane, Koomar, & May-Benson, 2010, p. 108; Smith Roley S. , Mailloux, Miller-Kuhaneck, & Glennon, 2007, p. CE2).

A formal professional master’s qualification would not only answer a need which has been identified among occupational therapists currently delivering sensory integration services in South Africa, but would also allow specialist knowledge to reach more individuals, families and relevant others who struggle daily with sensory integration challenges, ultimately ensuring best practice for all.

Although no rigorous epidemiological studies have been done on sensory processing dysfunctions, the results of prevalence studies done on smaller samples of populations are available. A study done in the United States indicated that the prevalence of sensory integration dysfunctions can vary between 5.3% and 13.7% (Ahn, Miller, Milberger, & McIntosh, 2004, p. 291). This study did have limitations, one of which was that a parental screening instrument was used, and the identification was based on parental perceptions.

The results were “consistent with hypothesized estimates published in the literature” (Ahn, Miller, Milberger, & McIntosh, 2004, p. 287). A study done in South African on “The prevalence of sensory integration problems in three to five-year-old black pre-school children in semi-structural preschool programmes in Mangaung, Bloemfontein”, using the “De-Gangi Berk Test of Sensory Integration”, found that 23% of the 100 children tested fell within the ‘at risk’ or ‘problem groups’ on the postural control test items, whilst 61% tested within the ‘at risk’ or ‘problem groups’ on bi-lateral integration test items (Van Jaarsveld, Van Vuuren, Venter, & Joubert, 2001, p. 4). In a study on “The developmental status and prevalence of sensory integration difficulties in premature infants in a tertiary hospital in Bloemfontein, South Africa”, where among others the “Test of Sensory Functions in Infants” was used, the results indicated that 79.2% of the infants presented with challenges related to adaptive motor functions (Lecuona, Van Jaarsveld, Van Heerden, & Raubenheimer, 2016, p. 18). Knowing the importance of the identified problem areas in the above studies, and their relevance to development and occupational performance areas such as play, school and personal independence, the candidate can only support a case for including specialist MOT-SIs in the community, health and school systems, to assist in the identification and intervention of sensory integration problems in children as early as possible, minimizing the long-term impact. A professional master’s degree in the field of sensory integration, one which allows for the attainment of competencies not only to address sensory integration challenges in first-world environments but also the challenges in third-world environments, could contribute to addressing this need.

In terms of the alignment of this study with the university’s programmes and policies, a master’s qualification is in line with the University of the Free State’s “Policy on Masters and Doctoral Studies” (University of the Free State, 2016, p. 4), as it would “allow for master’s degree by coursework” which “includes a research project comprising a minimum of 60 credits at NQF Exit Level 9”. The candidate will not be designing a qualification in totality, only the curriculum as a basis for a qualification, but it will be important to ensure alignment with the relevant policies of the Council on Higher Education (CHE) and institutional policies and guidelines. This will be further addressed

in Chapter 2, when all the relevant requirements and guidelines will be extracted for use in the design of the curriculum.

It is the candidate's hope that once a new professional master's degree for occupational therapists, specialising in the field of sensory integration, is delivered and master students exit into the field, this research will contribute in a small way to the aspiration of excellence by the University of the Free State, as this is at the core of the university's mission (University of the Free State, 2015, p. 1). It is also her hope for the long term that this research and the 'products' emerging from it will, as in the words of the current vice-rector research, Prof Corli Witthuhn, "improve lives and contribute to the improved wellbeing of societies" (University of the Free State, 2015, p. 1).

In concluding the context and justification of this study it needs to be stated that this PhD study in itself is conducted interdisciplinary between the School of Higher Education Studies and the Department of Occupational Therapy, as the University of the Free State ".....allows and encourages interdisciplinary approaches to the study of complex human, social, and scientific problems" (University of the Free State, 2016, p. 8). The candidate wished to draw upon expertise from within both fields during her PhD studies.

1.3 Literature overview

In approaching the topics included in this literature overview, the candidate argued that, to understand the importance of a professional master's degree in the field of sensory integration, it would be necessary first to look at the role of occupational therapy and the importance of sensory integration in its functioning. The relevance of sensory integration (and a possible specialised qualification in this field) to the current health and education system in South Africa will also be summarised before attention is given to the curriculum and other relevant literature.

Occupational therapy, sensory integration and its relevance in South Africa

Occupational therapy is concerned with people and their occupations. It focuses on helping them engage in those activities of daily life that they find meaningful and purposeful (American Occupational Therapy Association, 2002, p. 610). The domain of occupational therapy is comprehensive and is founded on the understanding that engaging in occupations helps to structure everyday life and contributes to health and well-being (American Occupational Therapy Association, 2014, p. 626). Sensory integration depends on body and brain structures that support performance skills, namely sensory-perceptual skills, motor-and praxis skills, emotional regulatory skills, cognitive skills and communication and social skills (American Occupational Therapy Association, 2014, p. 639). The theory of sensory integration and the research relating to it explicitly state that sensory integration is embedded in occupations (Spitzer, Smith Roley, Clark, & Parham, 1996, p. 124), and performance skills support purposeful engagement in occupations.

The theory of sensory integration was first described by Jean A. Ayres in the 1960s. She began by theorising on the behaviours of children with learning difficulties (Schaaf, Schoen, Smith-Roley, Lane, Koomar, & May-Benson, 2010, p. 99). The majority of sensory integration literature is focused on children, since sensory integration theory originated in the field of paediatrics. Ingraining sensory integration in occupational therapy, Ayres stated that sensory integration is a foundation upon which individuals can engage meaningfully in activities which promote health (Schaaf, Schoen, Smith-Roley, Lane, Koomar, & May-Benson 2010, p. 108). The importance of sensory integration in childhood development and learning is well recognised. Sensory integration difficulties in children contribute to poor functioning in the occupational performance areas of play, school, recreation, personal independence and interpersonal relationships.

The question could be asked, to what extent do sensory integration difficulties validate attention in terms of research and the development of a postgraduate curriculum, taking into account the draft strategy for the South African health sector 2030? (Human Resources for Health SA 2030, 2011). One of the four strategic objectives signed by the

Minister of Health was that of the School Health Programme. This stated that the programme would deal among other factors “with basic health issues such as eye care, dental and hearing problems.....” (Human Resources for Health SA 2030, 2011, p. 17). Two of the issues in the strategic objectives deal with sensory systems, the visual- and the auditory systems. Although the focus of sensory integration is on the tactile, proprioceptive and vestibular senses, sensory integration is also about how these three systems interact with, among others, the visual and auditory systems to provide integrated information to an individual. The vestibular and proprioceptive systems contribute, among others, to posture and balance. They provide a background for the more refined motor actions needed to be able to write. The vestibular system, together with the visual system, contributes to providing a stable visual field and to eye-hand coordination. The proprioceptive and tactile systems contribute to speech and language development which are fundamental to the ability to read (Schaaf, Schoen, Smith-Roley, Lane, Koomar, & May-Benson, 2010, p. 99). A study by Parham (1998, p. 123) already done in 1998 showed that academic achievement and especially “elementary arithmetic skills” and sensory integration functioning is related. This study was 4-year long longitudinal study and as summarised by the author that “measures of sensory integration in elementary students are significantly related to school achievement both concurrently and predictively over a 4-year period, even when controlling for intelligence. A particularly strong link between praxis and arithmetic achievement is evident” (Parham, 1998, p. 105). Although the contribution of these “hidden” senses (proprioceptive, vestibular and tactile) is not always acknowledged, occupational therapists are very aware of how sensory integrative dysfunctions impact on a child’s development and in the long run on school performance.

Drawing on her clinical experience and involvement in professional organizations, the researcher can state that the conditions/pathologies where sensory integration difficulties are most prevalent are in children with developmental delays, learning difficulties, intellectual disabilities, Developmental Coordination Disorders, Attention Deficit Disorders, Autism Spectrum Diagnosis, as well as those with Fetal Alcohol Syndrome. As noted above, research on children from black cultures in South Africa (Van Jaarsveld,

Van Vuuren, Venter, & Joubert, 2001) indicates that children from low socio-economic settings have a high prevalence of sensory integration problems. Given the cost involved in training in sensory integration, the majority of therapists who enrol for SAISI's training courses are, as already mentioned, from the private sector. This factor, together with the costs involved in assessing a child using an instrument like the SIPT, viewed as the gold standard in identifying children with sensory integration difficulties (Smith Roley & Schaaf, 2006, p. 25), implies that the majority of children in South Africa who experience sensory integration difficulties will never be able to afford sensory integration assessment or intervention. The statistics provided in the Draft Strategy for the Health Sector: 2012/13 – 2016/17 (Draft Human Resources Strategy for the Health Sector 2012/13 - 2016/17, 2011, p. 35) show that the private health care sector services about 35% of the South African population. The reality is thus reiterated, that about two-thirds of the population will be unable to afford an intervention which would make a difference to foundational functional academic skills such as, among others, reading and writing. The urgency to train occupational therapists with advanced knowledge in the field of sensory integration becomes more relevant when all of the above-mentioned facts are considered.

Higher Education and its relevance

In developing or designing a curriculum for a master's qualification, the policies and guidelines provided by the CHE become core, and all relevant documents therefore have to be reviewed. With the transformation of higher education that has taken place in South Africa since the early 1990s, very explicit aims for HE was stipulated. These were set out in the White paper 3 (South African Government, 1997, pp. 3,4). "Social transformation", development of intellectual abilities, meeting the needs for "high-level competencies expertise", "growth and prosperity", developing "responsible and constructively critical citizens", and creating of knowledge, the distribution and "evaluation" thereof, were seen as central in the purpose of higher education in South Africa. With a qualification such as the proposed professional master's degree in sensory integration, students would exit with "high-level competencies and expertise", and "responsible and constructively critical" citizenship would be fostered. By creating such a course, the candidate would contribute to the growth of these attributes through the design and ultimately the delivery of the

curriculum (South African Government, 1997, pp. 3,4). The creation of knowledge and the sharing thereof will be an integral part of the curriculum, especially considering that a research component must form part of a professional master's degree (Council on Higher Education, SA, 2013, p. 38). Taking into account "social transformation", the dire need for sensory integration services for those who currently cannot afford services, and especially for children, the candidate was driven to design a contextually relevant curriculum that would contribute to transformation, rather than developing one based only on existing programmes and qualifications.

Curriculum

The literature gives many definitions and attaches many meanings to 'curriculum'. It was important therefore for the candidate to clarify what is meant by 'curriculum' for the purpose of this research. Van den Akker, an international expert in the field of curriculum design and educational design research, describes five levels of curriculums (Van den Akker, 2013, p. 55). The first is the supra level, meaning a curriculum on an international level. The second is at the macro level, that is, on a national level. The third is a meso level, meaning a curriculum at an institutional level, and the fourth is the micro level, meaning it is delivered at a classroom level, while the fifth is the nano level, that is, at the individual or student level. The curriculum designed in this research will be at a meso level, one that will be delivered in a higher education institution in a specific health sciences department but within a specific field of practice. In the design of a curriculum at a meso level, Van den Akker offers further clarity by dividing the curriculum into an "intended curriculum", an "ideal curriculum" and a "formal curriculum" (Van den Akker, in Van den Akker, Gravemeijer, McKenney, and Nieveen (2006, p. 113)). The aim of this research will be to design an intended curriculum, and this will be discussed and further elaborated on in Chapter 2 (cf. 2.6)

Educational Design Research

Though she has worked as an academic for the past 23 years, the candidate was never exposed to developing or designing a curriculum through a formal research process. When introduced to educational design research by Prof Sarah Howie (Howie, 2013) and

subsequently through reviewing the literature, the candidate became aware of the possibilities this research approach allowed for solving her own research question, “What would be ‘the best’ curriculum for a professional master’s degree training in sensory integration that would also be contextually relevant?” The educational design research approach gave her the opportunity of using different research methods, to creatively and consciously design a curriculum, considering not only the context but also involving stakeholders. Educational design research not only permits the development of a tangible “product” (the curriculum), but additionally allows for the creation of knowledge. This is presented and discussed in detail in Chapter 3.

While reviewing the literature on curriculum development and design, the candidate was struck by the truth and relevance of a statement by Plomp and Nieveen on curriculum development:

...it is realistic to note the worldwide pattern that curriculum development is almost notorious for its weak relationship with research. Socio-political and practical arguments usually dominate curriculum decision-making. Priorities for curriculum projects seldom arise from systematic monitoring and analysis of practices and outcomes (Plomp & Nieveen, 2013, p. 53).

The candidate was therefore eager to develop a curriculum through a process of educational design research. By involving stakeholders and experts, she would gain more information on contextual realities, gather evidence relating to decisions taken on the design of the curriculum, and in doing so would create new knowledge.

1.4 Research question

The question asked by the candidate was:

“How would one design an internationally acknowledged curriculum for postgraduate sensory integration training in a developing country that would allow students to exit with identified competencies of knowledge, skills, and attitudes on sensory integration theory,

including assessment, intervention, and research that would be on a professional master's clinician level?"

1.5 Purpose statement

To design a professional master's degree (M OT (SI)) that when instituted would produce specialist occupational therapists in the field of sensory integration, able to deliver advanced sensory integration services in diverse contexts, addressing the needs of individuals and their families who struggle when sensory integration challenges interfere with their functioning.

1.6 Research aim

The aim of this research is to design a curriculum, relevant to the South African context but internationally acknowledged, for a professional occupational therapy master's degree in sensory integration (M OT (SI)), which will meet the needs of individuals and their families who struggle with sensory integration difficulties and dysfunctions.

1.1 Position of researcher

The candidate is an occupational therapist by profession and has been involved in undergraduate and postgraduate student training for the past 23 years. She holds a position as lecturer in the Department of Occupational Therapy, University of the Free State. Her master's degree was on the topic of the prevalence of sensory integration problems in toddlers from black cultures and the effect of a programme designed with activities that could enhance sensory integration in these children. The results of her research, together with lecturing in the field of paediatrics, involvement with service delivery and student clinical fieldwork in diverse and rural communities, have made her acutely aware of the challenges children face, together with the huge need for sensory integration services.

At a national level, the candidate has been involved with the South African Institute for Sensory Integration (SAISI) for the past 33 years and lectures regularly on their sensory integration training courses. On the international level, she has been invited to present research and work carried out in South Africa in the field of sensory integration. She represented SAISI in the founding of the International Coalition for Education in Ayres Sensory Integration in 2008. This coalition was reconstituted in 2016 as the International Council for Education in Ayres Sensory Integration (ICEASI).

During her involvement over the years with SAISI, the candidate became increasingly aware of the need for South African occupational therapists to receive formal postgraduate training, other than the training courses presented by SAISI. She has received numerous requests from occupational therapists aspiring to do a master's degree in the field of sensory integration, especially during the presentation of SAISI training courses.

Limited attention is given in sensory integration training courses on how to adapt and implement the approach to assessment and intervention developed in a first-world country (United States) to serve children growing up in impoverished environments. Contextual realities in South Africa include, for example, the fact that the 2014 General Household Survey (Statistics South Africa, 2015 (b), p. 29) indicates that only 18.1% of individuals in South Africa are covered by a medical aid scheme providing them with access to services such as occupational therapy. Further, the costs involved in the training and use of the Sensory Integration and Praxis Tests (SIPT), where competencies of knowledge and understanding of sensory integration dysfunctions and intervention are attained, are high. The focus of training is also mainly on the sensory integration services delivered by occupational therapists in private practice. Together with the cost implications, this limit both the access and the relevance of occupational therapists working in the public and community sectors. The majority of children in South Africa are thus not receiving occupational therapy services based in the field of sensory integration (OT-SI).

The candidate argues that a professional master's degree in the field of sensory integration, internationally acknowledged but contextually relevant for a third-world country such as South Africa, would not only lead to an increase in service delivery to all those in need but also to an increase in contextually relevant knowledge supported by research outputs.

In 2013, the candidate had the privilege of being on a SANTRUST pre-doctoral proposal development programme. This opportunity allowed her to develop a research proposal and was foundational in this study, as the knowledge, skills and attitudes obtained during the SANTRUST programme supported her throughout her PhD journey.

1.7 Research objectives

The overarching objectives formulated to fulfil the aim of this research will be:

Objective 1: To obtain contextual knowledge of relevant requirements and guidelines in higher education (inclusive of curriculum development) and relevant professional organisations that will contribute to design propositions and requirements, directing and providing educational 'boundaries' within the curriculum design process.

Objective 2: To identify the conceptual knowledge, skills and attitudes, as well as learning experiences to be included in the design of the curriculum of a professional master's degree in sensory integration which would allow clinicians to attain the competencies needed to deliver specialised OT-SI services.

Objective 3: To obtain contextual knowledge on the realities of delivering sensory integration services in South Africa and to ensure that the competencies needed to deliver specialist OT-SI services relevant to the South African context are included in the curriculum.

Objective 4: To engage in the progressive phases of the educational design process, iteratively evolving prototypes of a curriculum for a professional master's degree in

sensory integration which will ultimately culminate in a final version ready to be submitted to the institutional and statutory approval processes.

Objective 5: To carefully document the design process, together with design requirements and design proposals as they emerge during the research process, generating knowledge for future use.

1.8 Delimitation of the study

Factors which could not be controlled and could have had an “unending” effect on this project, lead to a delimitation of excluding a third and final phase of evaluation and reflection of the educational design research process originally planned for this study. The factors contributing to the limitation were the various processes of institutional and statutory approval and accreditation of the curriculum.

1.9 Philosophical foundations, research approach and methodologies

In designing a curriculum within a specialised field of occupational therapy, the candidate from an axiological stance, wanted to discover and/or confirm practical, real- world knowledge which would ensure greater opportunities for occupational therapists to achieve competencies which could be used to solve real-world problems in the field of sensory integration. Confronted with knowledge available from first-world sources, the candidate wanted to know what features needed to form part of a curriculum in order to make it relevant, realistic and executable in the context of the real-world practice in South Africa. Establishing contextual adherence and authenticity of the curriculum was thus an imperative, stemming from the candidate’s own ontological view of reality. Pragmatic knowledge would subsequently have to be created and an epistemology of pragmatism would therefore be followed using educational design research as methodology. Educational design research is an iterative process of research and activities, drawing on multiple research methods in order to arrive at an ideal ‘product’, which in this study would be the proposed curriculum. In this process, knowledge will also be created for future use. Feeding back into her ontological stance as she searched for realistic knowledge that was

context-appropriate, the candidate aspired to create new theoretical understandings in the form of design requirements and design propositions. An in-depth discussion of the relevant philosophical underpinnings and methodological considerations are presented and discussed in Chapter 3.

Educational design research emerged from design research, which is best described as “a ‘family’ of related research approaches with internal variations in aims and characteristics” (Van den Akker, Gravemeijer, McKenney, & Nieveen, 2006, p. 4). The two primary goals of educational design research are to create solutions/products (in the case of this study the intended curriculum) and to develop knowledge (on the design process) for future use. The methods used are seen as tools for creating and changing human artifacts or products. Methods to collect data are chosen to address the specific problem and/or situation. Qualitative and quantitative methods can both be employed and can include, for example, combinations of explanatory, interpretive, experimental, or exploratory methods (Van den Akker, Gravemeijer, McKenney, & Nieveen, 2006, p. 44).

To give the reader a sense of how pragmatic knowledge was created using educational design research, a brief summary of the research process will be presented but are discussed in detail in Chapter 4. The process relevant to this research consisted out of two of three different phases, those of analysis and exploration and design and construction (cf. Figure 1). The third phase of evaluation and reflection did not form part of the study, but are presented in short to provide a holistic picture of the educational design research process (cf. Figure 1).

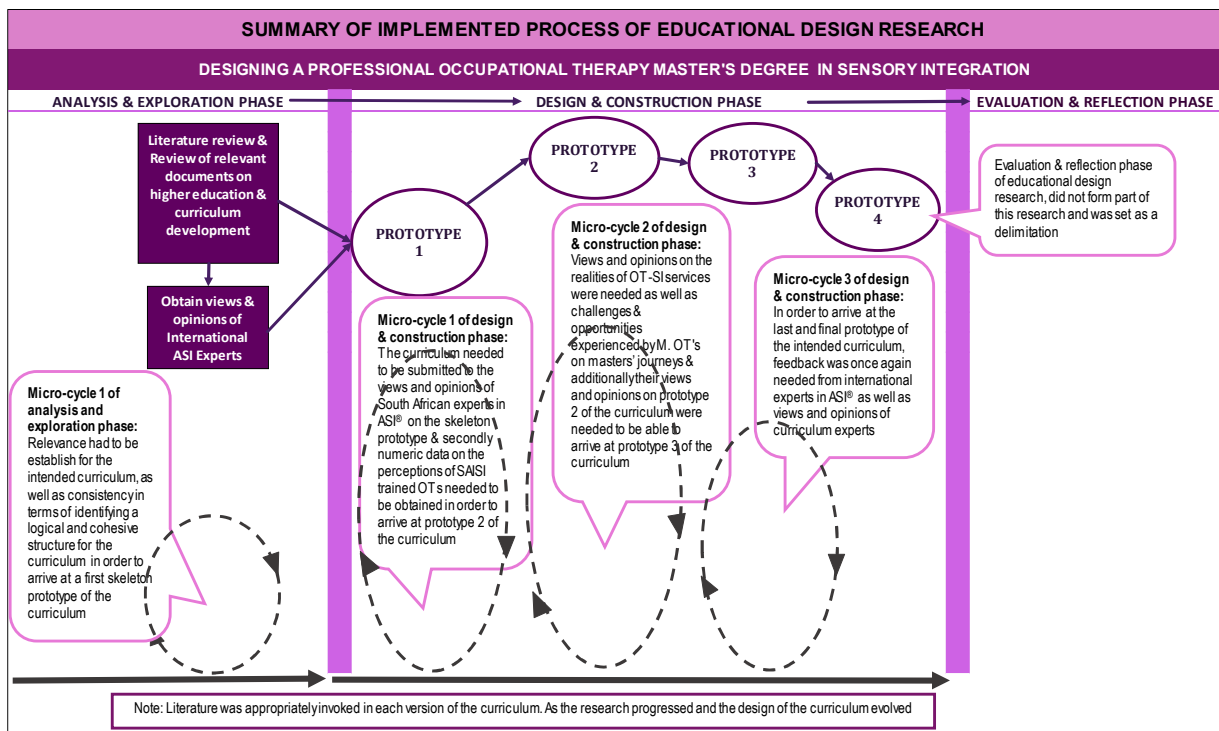


Figure 1.1: Summary of implemented process of Educational Design Research

During the phase of analysis and exploration, the candidate established relevance for the intended curriculum, as well as consistency in terms of identifying a logical and cohesive structure for the curriculum. During the micro-cycle included in this phase (cf. Figure 1.1) the candidate relied extensively on engaging with the literature, summarising, synthesising and extracting relevant theory to create a textual foundation (Trafford & Lesham, 2008, p. 75) for the research (Objectives 1 and 2, Table 2), and also to identify literature which was relevant to the design requirements and design principles. Additionally, she conducted semi-structured e-mail interviews with international experts in the field of ASI®, identifying those competencies that would be inherent of a master clinician in this field, as well as identifying possible teaching and learning experiences which, included in the curriculum, could foster these competencies. After completing the analysis and exploration phase, the candidate used the results from this first phase to design a skeleton curriculum. This served as the first prototype of the intended curriculum.

At the start of the design and construction phase of the research, the candidate submitted the skeleton prototype of the curriculum to the views and opinions of South African experts in ASI® who held academic posts at universities as well as lecturing on the SAISI training courses, as part of micro-cycle 1 of this phase (cf. Figure 1.1). A second data collection was also included in this micro-cycle and was the only quantitative data collection method used in this research. Numeric data on the perceptions of SAISI-trained occupational therapists were obtained through an electronic questionnaire. This provided data on perceptions of the contribution of SAISI courses to the clinicians' competencies, their opinions on their experiences, levels of satisfaction, and their need for further qualifications. The data obtained from both these sources were used to design and construct prototype 2 of the planned curriculum. The second micro-cycle in this phase (cf. Figure 1.1) consisted of two focus groups. The first of these was held with occupational therapists delivering OT-SI services in diverse and under-resourced environments. The aim was to obtain their views and opinions on the realities of service delivery, collecting contextual information of real world experiences in order to identify the unique competencies needed to deliver OT-SI services in diverse settings. The second focus group was to obtain the views of occupational therapists delivering OT-SI services who had completed (or were in the process of completing) master's degrees in a field of occupational therapy. The candidate asked about the challenges and opportunities they had experienced on their masters' journey in an effort to identify pitfalls and enablers that could be considered in the design of the curriculum. The same group of participants were also asked for their views and opinions on prototype 2 of the curriculum. As they had already gone through the process of obtaining a master's degree, the candidate argued that they could contribute to possible teaching and learning, as well as assessment activities. The results were used to design and construct prototype 3 of the curriculum. A third and final micro-cycle was implemented (cf. Figure 1.1) to obtain the views and opinions of two groups of experts. Prototype 3 was sent first to two of the international experts in ASI® who had already participated in the analysis and exploration phase, for their views on the curriculum and for confirmation that the initial competencies they had identified were sufficiently represented in the curriculum. Prototype 3 was then submitted

to the views and opinions of curriculum experts. After receiving feedback from these two groups of experts, the candidate revised the curriculum, shaping it into its final form.

The third and final phase of the evaluation and reflection phase (cf. Figure 1.1) could have served as a conclusive phase in an educational design research process, but for the purpose of this research this would have included obtaining the interpretations of the users of the delivered curriculum in their teaching environments. A delimitation was however set to exclude this third phase, since uncontrollable factors relating to the processes of institutional and statutory approval and accreditation of the curriculum would come into play (cf. 4.4).

An integral part of the educational design research process was the consistent revisiting of the extant literature and invoking the relevant literature in the design of the 'product'. This was done throughout all the cycles of this research. The writing up of design knowledge (theoretical understandings) in the form of design requirements and design principles was also required. This was done consistently throughout the research process and is presented and discussed in Chapter 4.

1.10 Chapter outline

A brief overview of the contents of the five chapters of this thesis will now be given. Although Chapter 2 provides an overview of the literature, it also allowed the candidate to identify and extract literature for use in the development of design requirements and design principles used in the design of the curriculum. Furthermore, an educational design research requires the constant infusion of the relevant literature during the process. New literature was thus consistently integrated into Chapter 4, together with literature already discussed. A summary of each chapter is presented below.

Chapter 1 Orientation to research:

This chapter starts by orienting the reader to the position of the researcher, helping to set the scene for the research. The context of the study and its justification are presented, together with the rationale as to why the research was done. A short overview of literature

provides the reader with a sense of the most important literature serving as contextual foundation for this research. The research question is then stated, followed by the research aim and objectives. The philosophical foundations, research approach and methodology used are briefly described, giving the reader a broad understanding of what guided and supported the study. A short overview of chapters follows, before the chapter is concluded with a discussion of important terminology.

Chapter 2: Literature overview and perspectives contributing to the design process

The candidate argued that it would be important for the reader to understand the domain for which the curriculum would be designed. The literature overview and perspective chapter therefore commence with a brief orientation to occupational therapy, followed by a discussion of sensory integration and its importance in functioning. Sensory integration and its relevance and realities in the South African context are discussed and placed in context with the new South African Health and School plan and its relevance for this study. The focus of the literature overview is then shifted to higher education, its relevancy and perspectives as they pertain to this study. The involvement of professional organisations and their respective roles in the design of a curriculum are also discussed, as well those of the university and statutory bodies. Curriculum and curriculum development, as they are relevant to this study, are overviewed and applicable perspectives are identified. Chapter 2 is concluded with an overview of the role of educational design research in curriculum development.

Using an educational design research approach meant not only that the literature provided the necessary theoretical grounding for the research, but that it also informed the design requirements and design principles developed during the research process. The candidate thus used a two-pronged approach for Chapter 2. The literature was overviewed and the perspectives pertaining to the research were described, but additionally the candidate extracted literature which potentially could have contributed to design requirements and design principles, and these are given at the end of the relevant sections in Chapter 2.

Chapter 3: Conceptual overview

This chapter starts with an overview of the philosophical foundations of the research. The candidate presents her inherent ontological and axiological roots which led to the selection of educational design research as a pragmatic method for creating knowledge, while in the process answering the research question.

Having chosen to use educational design research, the candidate discusses the methodological considerations, then presents and discusses the conceptual research plan that guided and supported her research. Chapter 3 concludes with an overview of the educational research design process as it was relevant to this study.

Chapter 4: Discussions on methods, activities and findings

Here the candidate constructs a framework for the presentation and discussion of the research method and its results, as used in this cyclical and iterative process of educational design research. She reviews the activities chosen and implemented and the findings which emerged and presented her with definite challenges. The educational design research process was an interweaved, interdependent process. The candidate started by reviewing the literature and then progressed to micro-cycles of research using different methods, while designing the curriculum and at the same time developing theory in the form of design requirements and design principles. It was clear that reporting on it would require considerable coherency and consistency. After much consideration, the candidate made the decision to present the whole educational design research process together with the results, as implemented in this study, in one chapter.

The chapter starts with the general working methods. As most of the qualitative research activities used and applied had similarities, they are presented as a once-off, to avoid the repetition of information. Exceptions are discussed under the relevant research activity. Ethical considerations as well as the delimitations of the research are also discussed, followed by the educational design research process as it was implemented during this study. The two phases used during this research to arrive at the intended curriculum were the 'analysis and exploration phase' and the 'design and construction phase', comprised

of micro-cycles of research activities. Each micro-cycle had its own aim, with its phase objectives set to ultimately achieve the aim of this research and its overarching objectives, as stated in 1.5 and 1.6. Each of the two phases, together with the relevant aims, objectives, micro-cycles and activities, are consecutively presented and discussed throughout the chapter. At the end of each micro-cycle, the findings/results are presented together with the implications for the design of the curriculum. Sections are concluded with the addition and/or refinement of design requirements and design propositions, serving as the theoretical understandings or knowledge created during this research process. Chapter 4 is concluded with the final 'products' of this research, namely the proposed curriculum and the final design requirements and design propositions.

Chapter 5: Conclusions, reflections and the future

Chapter 5 is the final chapter of the thesis and not only provides the reader with the key features of the study but also serves as a conclusion of this research journey. This is done by reprising the context and purpose of the research, the delimitations and reflection on limitations. An abbreviated documentation of how the research question was answered is then presented, proceeding with the discussion of the contribution to knowledge that was made, not only through the designed intended curriculum and the development of the design requirements and design propositions but also through additional products which emerged from the research process, such as the Model of Competencies. The chapter and the thesis are concluded with the candidate's reflections on her PhD journey and final conclusive remarks.

1.11 Important terminology

In the interest of clarity, in this section the candidate reviews how the key terminologies forming an integral part of the research were viewed, understood and applied by her in this study. These terminologies are presented in alphabetical order.

Ayres Sensory Integration® versus sensory integration

The theory of sensory integration was first described by Jean A. Ayres in the 1960s, when she began theorising on the behaviours of children with learning difficulties (Schaaf, et al., 2010, p. 99). Ingraining sensory integration in occupational therapy, Ayres stated that sensory integration is fundamental to engaging meaningfully in those activities which promote health (Schaaf, et al., 2010, p. 108). In the words of Smith Roley, Mailloux, Miller-Kuhaneck and Glennon (2007, p. CE6), “Based on a long and rich history of theory formulation, test development, hypothesis testing, and clinical practice, sensory integration represents one of the most impressive accomplishments to emanate out of occupational therapy”.

Many of Ayres’ first generation scholars and other researchers have continued with her work and have expanded on her original studies, leading to different concepts, models and “different perspectives” (Smith Roley, Mailloux, Miller-Kuhaneck, & Glennon, 2007, p. CE5) within the field of sensory integration. There are many researchers and clinicians who claim to busy themselves with sensory integration. A closer look, however, reveals that they are either not actually working with sensory integration as Ayres described it or are removed from it. For clarity and because of the confusion in the literature it is important to note that for the purpose of this thesis sensory integration will be rooted in the work and findings of Ayres and those scholars who have continued with her work, now trademarked as “Ayres Sensory Integration®” (ASI®) (Smith Roley, Mailloux, & Glennon, 2007). The terms ASI® and sensory integration will be used interchangeably, depending on whether a reference is specifically to the core components of ASI® or to sensory integration as a field of speciality within occupational therapy.

When reference is made to OT-SI it will refer to the provision of occupational therapy using a sensory integration approach. When a MOT-SI is referred to in this thesis, it will mean an occupational therapist who have completed a professional master’s degree in sensory integration, delivering services based in the field of sensory integration and rooted in the work of Ayres.

Competency and core-competencies

For this research, the view of Knouwenhoven will be adopted in the discussion of competency and core competencies (2009, pp. 5,6). Knouwenhoven is a senior education adviser at the Vrije Universiteit Amsterdam, Centre for International Cooperation, and assists nationally and internationally with the (re)design of competence-based curricula for programmes. He describes competency and core competencies as follows:

Competency is the capability to choose and use (apply) an integrated combination of knowledge, skills and attitudes with the intention to realise a task in a certain context, while personal characteristics such as motivation, self-confidence, willpower are part of the context. **Core competencies** is the set of appropriate competencies needed to realise a key occupational task at a satisfactory or superior level (Knouwenhoven, 2009, p. 5).

Curriculum:

Curriculum has many meanings and forms, but for the purpose of this study it will be an intended curriculum as described by Van den Akker in Van den Akker, Gravemeijer, McKenney, and Nieveen (2006, p. 113), delivered at a meso level. This means that it will be delivered at a higher education institution (Van den Akker, 2013, p. 55) and ready to be submitted to a process of institutional approval and statutory accreditation.

Dysfunction versus Difficulty:

A sensory integration dysfunction is viewed as a dysfunction supported by research and identified by standardised assessment instruments, specifically developed to assist in the identification of certain patterns of sensory integration dysfunctions. A sensory integration difficulty means that a definite sensory integration dysfunction is not present or have not yet been identified, but the individual struggles with certain performance components (such as balance or coordination) or performance areas (such as school or play) which can be attributed to less than optimum sensory integration.

Learning programme:

In the interest of clarity and to confirm that the curriculum, for the purpose of this study, is seen as a component/part of a learning programme, the candidate presents a short discussion on the term 'programme' as viewed in higher education. A higher education institution has learning programmes, both undergraduate and postgraduate, which lead to a qualification (Council on Higher Education, No Date). An example of a learning programme is a Master's Degree in Occupational Therapy. Each learning programme has a curriculum or curriculums, depending on the nature of the programme. A learning programme includes the programme design (or curriculum/s), student recruitment, admission and selection, staffing, teaching and learning strategy, student assessment policies and procedures, infrastructure and library resources, programme administrative services and postgraduate policies, regulations and procedures. All learning programmes presented by a higher education institution must meet legislative requirements as set out in the Higher Education Qualifications Sub-Framework (HEQSF). The curriculum designed through this research process will in the long-term form part of a learning programme for the qualification M OT (SI).

Study versus research

There are many conflicting opinions on the use of the words 'study' and 'research' and their definitions. In this thesis, the candidate saw 'study' as the all-encompassing, relevant activities that were involved in and contributed to this PhD, while 'research' refers to the methodological considerations, the research process, methodologies, activities and the findings/results included in the study.

CHAPTER 2: LITERATURE OVERVIEW AND PERSPECTIVES CONTRIBUTING TO THE DESIGN PROCESS

2.1 Introduction

The body of knowledge (literature) that contributed to this research consisted mainly of published works, statutory documents, documents of professional bodies, summaries of presentations and personal discussions (Trafford & Lesham, 2008, p. 68). In this literature review the candidate first examines the profession and field of speciality that is under consideration, as well as the current governmental positioning relevant to the profession and field of specialisation. The focus of the literature is then shifted to higher education which forms the backdrop of this study, together with relevant professional bodies. Curriculum design was at the core of the research and the relevant literature offering insight and support in the design process was therefore reviewed and discussed. Having chosen to use educational design research as a methodology, the candidate reviewed the underpinnings of this approach and presented the relevant literature. The extant literature on educational design research not only offered insights into curriculum design but also guided the methodological considerations relevant to this study (which will be discussed in Chapter 4). In summary, the literature review was guided by a mix of a “pre-chosen theoretical position” and “methodological underpinnings”, as described by Grbich (2007) in (Delport, Fouché, & Schurink, 2011, p. 299).

This chapter gives an overview of the literature relevant to this study and places the studies discussed in the perspective of the research undertaken. A two-pronged approach is used during the literature review. The studies reviewed in this chapter not only provided the necessary theoretical grounding for this study but in particular also informed the initial phase of analysis and exploration of the design research process used in the study. This two-pronged approach is backed by the literature. The candidate cannot summarise it more appropriately than do Herrington, McKenney, Reeves and Oliver (2010, p. 5), when they state: “the literature review process is critical in design-based research because it facilitates the creation of draft design guidelines to inform the design and development of

the intervention that will seek to address the identified problem.” Throughout this chapter the candidate will thus provide a review of the literature and place it in perspective as it relates to this study.

In approaching the reality of designing a curriculum through a research process of educational design research, the candidate drew on the concepts of design requirements and design propositions of McKenney and Reeves (2012, p. 113). The decision to use these concepts also guided her in the literature review and data analysis, as the aim of the research was to design a curriculum for a specific population within a specific context. To answer the research question, the candidate needed to know which relevant design requirements and design propositions could inform the design of the curriculum (McKenney & Reeves, 2012, pp. 106,107). These are discussed in Chapters 3 and 4, but in this chapter the candidate clarifies how they were extracted at this early stage from the literature. Design requirements and propositions are theoretical ‘products’ of the research process. They can be extracted from the literature, come to light through the data obtained, or originate from the creativity of the researcher or designer (McKenney & Reeves, 2013, p. 81). Design requirements becomes the “operational criteria” that provides boundaries or opportunities for a design (McKenney & Reeves, 2012, p. 106) and they need to be aligned with the long-term goal of the curriculum, addressing key issues of the design. Design propositions on the other hand provide information on what could be done during the design process to obtain the necessary effect or information to produce answers or understandings that will contribute to the design of the product or in the case of this research, the curriculum (Denyer, Tranfield, & van Aken, 2008, p. 396). Theory that could contribute to initial design requirements and propositions will be summarized at the end of each section of this chapter. The candidate will also indicate whether she believes the extracted literature could at this stage contribute to a requirement or to a proposition.

It should be noted that reviewing the literature will be an ongoing process during the design phase of the research, as findings and/or adjustments made to the curriculum can

lead to the review of new or additional literature (Herrington, McKenney, Reeves, & Oliver, 2010, p. 5).

The first part of the literature overview and perspective gives supporting background information on occupational therapy and the importance of sensory integration (SI). This is followed by a section on higher education, relevant professional bodies, curriculum and curriculum development, and on educational design research as an approach.

2.2 Occupational therapy and sensory integration

Occupational therapists believe that occupation is the highest level of human function, that it develops and integrates the individual's potential of body, mind and will, through the process of doing (Creek, 2008, p. 36)

The domain of occupational therapy is comprehensive and is founded on the understanding that engaging in occupations helps to structure everyday life and contributes to health and well-being (American Occupational Therapy Association, 2014, p. S3; Blair, Hume, & Creek, 2008, p. 26). The focus of occupational therapy is on assisting people to engage successfully in activities of daily life that they find meaningful and purposeful within the occupational performance areas of education, work, play, leisure and social participation (American Occupational Therapy Association, 2014, p. 611). Occupational therapists are trained to deal with health and developmental issues, as well as those environmental and/or contextual factors that impact on the occupational performance of individuals, groups and communities.

When an individual can no longer engage successfully in an occupation, some form of dysfunction is likely to be present. This could be due to abnormal development relating to sickness, to environmental circumstances, societal or historical events, to new expectations which cannot be met, and/or to loss of skills as a result of pathology or trauma (Creek, 2008, p. 36). Among the many dysfunctions that can influence an individual's occupational performance is sensory integration dysfunction. A study by Koenig and Rudney in 2010 on "Performance challenges for children and adolescents

with sensory processing and integrating sensory information” (as cited in Parham & Mailloux, 2015, p. 274) systematically reviews 35 studies that considered the challenges children and adolescents face in “areas of play, leisure and social participation; activities of daily living and instrumental activities of daily living; rest and sleep; and education and work”. The conclusion of this study was that “sensory difficulties problems were related to occupational performance difficulties” in all the mentioned areas (Parham & Mailloux, 2015, p. 274).

Sensory integration depends on body and brain structures which support performance skills. They include sensory-perceptual skills, motor-and praxis skills, emotional regulatory skills, cognitive skills, and communication- and social skills (American Occupational Therapy Association, 2014, p. S6). The theory of sensory integration and subsequent research explicitly states that sensory integration is embedded in occupations (Spitzer, Smith Roley, Clark, & Parham, 1996, p. 124) and that occupations depend on performance skills that support purposeful engagement in occupations.

Learning and development are dependent on accurate information provided by an individual’s sensory systems. All sensory information needs to be processed by the brain. A child’s capacity to process such information depends on his/her developmental level. This in turn is influenced by the child’s environment, culture, caregivers and social support systems (Schaaf & Smith-Roley, 2006, p. 3). Sensory integration is about the brain’s ability to regulate, modulate and organize sensory information and respond to it in a functional and appropriate manner, or as Ayres has stated, “Sensory integration is the neurological process that organizes sensations from one’s own body and from the environment and makes it possible to use the body effectively within the environment” (Ayres, 2004, p. 9). The phrase “to use” in this definition “ties sensory processing to the person’s occupation” and “that is Ayres’ hallmark” (Parham & Mailloux, 2015, p. 259). Engaging successfully and purposefully in activities of everyday life depends on sensory integration. Sensory integration influences development and therefore the way in which we learn, the way in which we perceive ourselves, and the way in which we engage in health-promoting occupations.

Although the focus of sensory integration is on the tactile, proprioceptive and vestibular senses, sensory integration is also about how these systems interact with the visual and auditory systems to provide integrated information to an individual about his/her world (Schaaf, Schoen, Smith-Roley, Lane, Koomar, May-Benson, as cited in Kramer & Hinojosa, 2010, p. 99). The vestibular and proprioceptive systems are influential in maintaining posture and balance in both static and dynamic actions. Together they create a background for more refined motor actions, such as those needed in an activity such as writing. The vestibular system, together with the visual system, contributes to maintaining a stable visual field and also to eye-hand coordination. The proprioceptive and tactile systems contribute to speech and language development, which is fundamental to reading abilities. Although the contribution of these “hidden” senses (proprioceptive, vestibular and tactile) is not always acknowledged, occupational therapists trained in sensory integration are very aware of how sensory integrative dysfunctions can impact on a child’s development and, in the long run, on school, home and social performance.

2.2.1. Research on sensory integration problems

Current and ongoing research in the field of sensory modulation dysfunctions indicates that 5-16% of the general population of children experience Sensory Modulation Disorders (James, Miller, Schaaf, Nielson, & Schoen, 2011). Sensory modulation is about the central nervous system’s ability to produce appropriate responses that are in relation to the intensity of the incoming sensory stimuli, and not “under-responding or over-responding” to the stimuli (Parham & Mailloux, 2015, p. 267). Also, of relevance is the rising numbers of children who are identified with sensory processing issues. The number of children with an autistic spectrum disorder is increasing at an alarming rate. According to the website “Autism Speaks”, the U.S. Centre for Disease Control and Prevention states that 1 in 88 American children are on the autism spectrum (Autism Speaks Inc, 2013). Hyper- or hypo-reactivity to sensory input or unusual interest in sensory aspects of the environment (such as apparent indifference to pain/heat/cold, adverse response to specific sounds or textures, excessive smelling or touching of objects, fascination with

lights or spinning objects) are all symptoms likely to be present in a final diagnosis (American Psychiatric Association, 2012).

Stewart Mostofsky, from the John Hopkins University, United States, is involved in research on motor skills and motor learning deficits in children with autism and how these relate to praxis difficulties (Mostofsky, 2012). Praxis within the theory of sensory integration is described by Ayres as “a uniquely human aptitude that underlies conceptualization, planning and execution of skilled adaptive interaction with the physical world” (Ayres, 2004, p. 9) in other words it is the ability to “figure out” how to use the body in 3D-space when engaging in daily tasks that are novel. Mostofsky (2012) hypothesized that the praxis abilities of children with autism and their sensory feedback are poorly developed. Pfeiffer, Koenig, Kinnealey, Sheppard and Henderson (2011) quote the increasing number of research studies which report on the prevalence (up to 88%) of sensory processing difficulties among children with Autism Spectrum Disorders. They often encounter difficulties with regulating responses to sensations (often very specific stimuli) and may use self-stimulation to compensate for limited input or to avoid overstimulation. Self-stimulatory behaviours include repetitive movements which serve no perceptible purpose in the environment but have social, personal and educational implications and often limit the child’s ability to engage or participate in daily activities.

According to Lane (2012), a high (50%) co-morbidity exists between Attention Deficit Hyperactivity Disorder and praxis dysfunctions. The fact that 2027 records are available at the United States Library of medicine on the subject of sensory processing and Attention Deficit Hyperactivity Disorder confirm that this topic is receiving focused attention (United States Library of Medicine, National Institute of Health, 2013).

Developmental praxis disorders are recognised and treated as sensory integration disorders. There is an ongoing debate on whether or not Developmental Coordination Disorder is actually a praxis disorder. The reason for this is that children with Developmental Coordination Disorders and those with developmental praxis disorders encounter the same difficulties (Mario, 2012). Among the difficulties these children

experience are impaired participation in normal life and school activities, delay of motor milestones, lack of ability in sports, clumsy gross and fine motor skills, and the presence of soft neurological signs. In an article on: “Dyspraxia or developmental coordination disorder? Unravelling the enigma”, Gibbs, Appleton and Appleton (2007) argue that, in practice, dyspraxia and Developmental Coordination Disorders should be regarded as synonymous. The United States National Institute of Health records 2809 sources on the topic of sensory processing and Developmental Coordination Disorders, again confirming the wide interest in this topic (National Institute of Health, 2013).

While most of the research on sensory integration is done in the United States, occupational therapists in South Africa are increasingly confronted in clinical practice with children experiencing difficulties with sensory integration which impact on their daily functioning. From her own clinical experience and involvement in professional organizations in South Africa, the researcher can confirm that the most common conditions/pathologies where sensory integration difficulties are prevalent are in children with developmental delays, children growing up in low socio-economic environments, with learning difficulties, Intellectual Disabilities, Developmental Coordination Disorders, Attention Deficit Disorders, Autism Spectrum Disorders, as well as children with Fetal Alcohol Syndrome. Recent research done in South Africa are starting to confirm clinical experiences. In 2016 research on “The developmental status and prevalence of sensory integration difficulties in premature infants in a tertiary hospital in Bloemfontein, South Africa” (Lecuona, Van Jaarsveld, Van Heerden, & Raubenheimer, 2016, p. 18) was published, indicating, among other, a 79.2% incidence of at risk or poor adaptive motor functions in premature infants from low socio-economic environments. A study done on “Sensory processing, praxis and related social participation of 5-12-year-old children with Down syndrome attending educational facilities in Bloemfontein, South Africa” (Van Jaarsveld, et al., 2016, p. 18) indicated that 80% of a small sample of 15 participants, experienced difficulties with praxis. The most recent study completed as part of a master’s qualification at the University of the Free State, South Africa on “Sensory integration difficulties and dysfunctions in children with Fetal Alcohol Spectrum Disorders” showed

on the SIPT results that 46.7% of the children fell into the pattern of Visuo- and Somatodyspraxia (Du Plooy, 2017, p. 191).

Evidence of sensory integration difficulties among children is, according to the literature, mounting and supports the need for specialists within the field.

2.2.2. Research and evidence on the efficacy of Ayres Sensory Integration® intervention

Although research providing evidence for the efficacy of Ayres Sensory Integration® (ASI®) intervention is still very much under debate, two major outcomes in recent years of collaborative research in the United States are providing researchers in the field with ‘tools’ to gather distinct evidence on intervention. The first was the development of the Ayres Sensory Integration® Fidelity Measure® (Parham, et al., 2011). This “defined the structure and process elements core to ASI® intervention”. The use of this fidelity measure in research will ensure that when an intervention is measured it will be recognised and acknowledged as an ASI® intervention and not a mixed breed of sensory types of interventions. The second outcome was the finding in 2007 of (Mailloux, et al., 2007) Mailloux et al (in Schaaf, et al., 2015, p. 2) that Goal Attainment Scaling was “found to be a sensitive outcome measure” which could “measure functional change after ASI® intervention”. Thus both the fidelity measure, that can provide evidence of the fidelity of sensory integration intervention, and Goal Attainment Scaling, which can be used to set measurable goals when planning intervention, are currently available and together can contribute to more effective research on ASI® intervention.

According to Schaaf and Mailloux (2015, pp. 9,10), “three recent small, but rigorous, randomised controlled trials” studies where occupational therapy interventions using sensory integration principles were implemented with children with autism provided “positive results”. Iwanaga, et al (2014) did a pilot study on “Efficacy of sensory integration therapy for Japanese children with high-functioning autism spectrum disorder”, whilst Pfeifer, et al (2011) did a pilot study on the “Effectiveness of sensory integration interventions in children with autism spectrum disorders. The third study done by Schaaf

and Lane (2015), looking into “a best-practice based protocol for assessment of sensory features” in particular showed significant results on Goal Attainment Scaling in terms of the primary outcomes after ASI® intervention. In this study, both the fidelity measure and Goal Attainment Scaling were used. It is foreseen that, among other effects, the current increase in intervention studies will lead to “an increased recognition of ASI® intervention as a potentially valuable intervention strategy” (Schaaf, et al., 2015, p. 2).

In a first study in South Africa where the Ayres Sensory Integration® Fidelity Measure® was used investigating the effect of sensory integration intervention on premature infants, it was found that after a relatively short period of weekly intervention there were a “noticeable positive effect” on “sensory processing in terms of registration, modulation and discrimination contributing to their ability to develop supportive skills for optimal development” (Lecuona, Van Jaarsveld, Raubenheimer, & Van Heerden, 2017, p. 982).

Scepticism and critique on the use of sensory integration as a treatment approach remains to be prevalent in South Africa but despite this, the demand for sensory integration services are escalating. With the recent increase in outcomes-based evidence on the efficacy of sensory integration treatment, the candidate argues that the need for therapists trained in sensory integration in South Africa and thus the need for a qualification such as the one designed through this research will also increase.

2.3 Sensory integration and its relevance and realities in South Africa

Although research on sensory integration in South Africa has so far been limited, there is a growing interest in research in this field and publications are on the increase as noted in 2.2.1. Studies on children from different cultures and socio-economic settings in South Africa (Van Jaarsveld, 2010, pp. 8-13) have indicated that children from low socio-economic settings have a higher prevalence of sensory integration problems. The DeGangi-Berk Test for Sensory Integration (Berk & DeGangi, 1994) was used as the measuring instrument. On the total test scored for bilateral motor coordination, statistical significant differences were found between children from low and high socio-economic settings, with children from high socio-economic settings performing better (Van

Jaarsveld, 2010, p. 12). Total test score results for postural control indicated an overall tendency for children from high socio-economic settings to perform better than children from low socio-economic settings (Van Jaarsveld, 2010, p. 11). This led to the overall conclusion that children from low socio-economic settings are more prone to experience difficulties with components dependent on sufficient sensory integration. Research on the patterns of sensory integration dysfunctions in South African children confirm that there is relative consistency in patterns of sensory integration dysfunction between children from South Africa and those assessed on similar measures in the United States (Van Jaarsveld, Mauilloux, Smith Roley, & Raubenheimer, 2013). A PhD study is currently being done by Janine van der Linde in the Department of Occupational Therapy of the University of the Witwatersrand, on the development of a screening instrument to identify sensory integration difficulties in children from low socio-economic environments in South Africa, in an effort to address the need of a contextually relevant assessment instrument.

An additional factor which adds to the unique context of this study and has already been mentioned, is that the majority of South Africa children needing sensory integration services as part of their occupational therapy treatment are currently not receiving such services. The long-term effects of lack of services are unknown but considering that sensory integration is associated with school achievement, it stands to reason that children not receiving needed sensory integration services, can as they grow older, be further disadvantaged when compared to children who have access to these services.

With regard to the provision of sensory integration services over the individual lifespan, it is the candidate's personal view that these services in South Africa are still limited and in a developing phase. It is evident that there is an increasing need for sensory integration services in this country. Particular areas where work has been done and is still evolving are within the mental health care and the adult wellness and corporate fields. A study done in Bloemfontein, South Africa on "The incidence of sensory integration problems in a distinct sample of individuals with disorders characterised by symptoms of psychosis" reported the presence of a wide variety of sensory integration problems in functions supported by the vestibular-proprioceptive system, the somatosensory system as well as

the visual-vestibular system (Annandale, Van Jaarsveld, Van Heerden, & Nel, 2016, pp. 33,34).

Although the need for services over the lifespan are on the increase, the greatest need, according to the candidate's clinical experience and involvement in the South African Institute for Sensory Integration (SAISI), is currently for sensory integration services among the paediatric population. The relevant South African governmental goals and plans in this field will briefly be discussed.

2.3.1. The new South African Health and School plan and its relevance for this research

The South African Government has committed itself not only to the Millennium Development Goals (Department of Health, South Africa, 2012), but also to maternal and child health. An international institution such as the World Bank, whose business it is to invest in global future economic growth, support and acknowledge the importance of early childhood development, placing emphasis on identifying learning needs early and continuously, both within and outside the school system. They deem it important enough to note the emerging science of brain development showing that, for optimal development, the 'nurturing' (stimulation) of a developing brain is important and needs to start as early as possible, as foundational skills acquired in early childhood provide the basis for lifelong learning (Worldbank, 2010). Sensory integration develops consistently and progressively during a child's development and is directly related to the experiences to which he/she is exposed. Purposefully planned, enriched sensory environments and activities that a child engages with can create structural and functional changes to the nervous system (Smith Roley, Blanche, & Schaaf, 2001, p. 12).

The re-engineering of health services in South Africa focuses on delivering primary health care to mothers and children. The Health Plan concentrates on lowering the mother and child mortality rate, preventing sickness and disease, improving service delivery and access to services, as well as building capacity in terms of health workers (Department of Health, South Africa, 2012). The Departments of Health, Basic Education and Social Development are key role players in the instatement of programs which will contribute to

achieving the goals of the new Health Plan (Department of Health, South Africa, 2012), as well as the accomplishment of the School Health Program (Departments of Health and Basic Education, 2012). In the Convention on the Rights of the Child in South Africa, the ministers of Health and Basic Education vowed to put children first and thereby prioritize their needs. In his State of the Nation address in 2010, the President committed the government to re-establishing health programmes in public schools (Departments of Health and Basic Education, 2012). School health services are considered one of the 'key components' of the health sector's efforts to improve primary health care. The education sector also views the provision of school health services as a key component in their efforts to realise the educational rights of all children. The Integrated School Health Policy (Departments of Health and Basic Education, 2012), provides a framework for the role of the different departments in addressing the health needs of learners. The policy not only addresses the immediate health problems of learners (including barriers to learning) but also provides for the implementation of preventative and promotive services that will contribute to health and well-being during both childhood and adulthood (Departments of Health and Basic Education, 2012, p. 11). The importance of the formative school years is recognised also in terms of development and learning outcomes. Emphasis is placed on the provision of health services in schools and not simply on screening and referral services. In implementing the School Health Policy, the Department of Social Development is partnered with the National Integrated Plan on Early Childhood Development.

The allied health professions are not currently mentioned as part of these 'teams'. Reference is made, however, to 'other relevant stakeholders and role players'. At this stage of the implementation of the health and education plans leading to 2030 (Human Resources for Health South Africa 2030, 2011), an argument could be made that policy makers are addressing the needs in line with the Millennium Development Goals (Statistics South Africa, 2015 (a), pp. 30,66). They are also focusing on health issues surrounding survival and health, basic educational, and social developmental issues (that will hopefully create an environment in which optimal development becomes possible) without including and naming all the role players, such as allied health professionals and

specifically the occupational therapist. The assumption is that once the mother and child survival rate increases the need for allied health services will also increase. While the health sector will need to focus on childhood disorders, the education system will need to deal with children with developmental challenges and those with barriers to learning caused by premature birth, birth defects, or childhood illness.

On the basis of the facts in this section of the literature review, the candidate argued that the need for occupational therapists with specialised knowledge and skills in sensory integration will increase as the new Health and School plan unfolds. Maternal and child mortality rates should start to decrease, but the need for specialised services will at the same time increase and with it the need for more services.

It was noted that sensory integration services taking into account the individual lifespan are still developing in South Africa. The candidate strongly believes that as knowledge about sensory integration increases, along with recognition of its importance in occupational performance, the demand for specialized sensory integration services will also increase. The growing need for sensory integration services may be met by the training and development of qualified sensory integration practitioners. A possible way of meeting this training need is through the development of a Professional Master's Degree in sensory integration.

The focus of this PhD research is on the design of a curriculum for occupational therapists in the field of sensory integration. The next section of the literature review will therefore focus on the relevant literature on higher education and curriculum development.

2.4 Higher Education

This part of the literature overview gives a broad overview of higher education, both internationally and nationally. An extensive field with a long history, higher education offers a multitude of topics that could be reviewed. For the purpose of this overview the researcher will focus on the specific relevance for higher education of a *postgraduate*

qualification in the health professions, where the core focus of curriculums still largely depends on the developments and research happening within the profession.

2.4.1 Higher Education Internationally

“The Trend” report, published by the United Nations Educational, Scientific and Cultural organizations (UNESCO) on directions in higher education internationally and prepared for the 2009 UNESCO World Conference on Higher Education (Altbach, Reisberg, & Rumbley, 2010), among other aspects highlights a number of key factors. These are the significant expansion in higher education, increased opportunities for higher student numbers, the impact of technology on education, and the impact of the global socioeconomic environment that poses definite funding challenges for higher education institutions (Altbach, Reisberg, & Rumbley, 2010, p. vii). Other aspects that received attention in this report and are of relevance for this research are ‘increased academic mobility’, ‘the economy of knowledge’ and ‘international competitiveness’, and the importance of research. Of the first mentioned facts and challenges in higher education the candidate will focus on technology and funding, as these issues are directly relevant to her research. Where relevant, she will also draw on more recent publications, including the 2014 report of Price Waterhouse Cooper on Perspectives on Higher Education (PricewaterhouseCoopers, 2014) and the New Media Consortium Report on Higher Education (Johnson, Becker, Estrada, & Freeman, 2015). The New Media Consortium Horizon Project is backed by 13 years of research and publications on “emerging technology trends and uptake in education” (Johnson, Becker, Estrada, & Freeman, 2015, p. 1).

Technology and its use will be a focus area in the design of the proposed curriculum and will be addressed in the design process. The New Media Consortium report on higher education (Johnson, Becker, Estrada, & Freeman, 2015, p. 1) is aimed at supporting higher education institutions in making choices relating to technology that will “improve, support, or extend learning and creative enquiry”. In particular, they focus on “which trends and technologies will drive educational change” in the next five years (2015-2019). One of the trends discussed which is relevant for this research is “the increasing use of

blended learning” (Johnson, Becker, Estrada, & Freeman, 2015, pp. 16,17). Blended learning in higher education is increasing for a number of reasons. It is flexible and offers students an effective virtual learning environment, with the possibility of online social activities and opportunities for critical thinking, provides them with different learning styles, allows them to engage off campus, and, importantly, gives them the option of choosing from best practices. It is expected that most users of the proposed curriculum will be domiciled nationally and that classroom contact will be reduced to the essential minimum. Blended learning methods, such as e-learning, the flipped classroom, web conferencing and other collaborative learning spaces, will be further explored during the design process.

Funding, specifically that related to the costs involved for users of the designed curriculum, will be considered and ‘calculated’ throughout the design process. The 2014 publication on “Perspectives in Higher Education” by PricewaterhouseCoopers (2014, p. 2) addressed the issue of affordability of higher education and highlighted students’ calls for higher education to be cost effective, which reinforced the importance of accounting curriculum costs during the design process. One of the ways of lowering costs discussed in their publication was the option of on-line education (PricewaterhouseCoopers, 2014, p. 3) and this supports the first point raised in this paragraph, the exploration of on-line technology as part of the design of the curriculum. The authors of this report did however note that convincing research on the success rate of online education is not yet available. This needed to be kept in mind during the design process, especially in terms of the percentage of use of online activities.

On an international level academic mobility in higher education is another trend which needed attention in this research. The possibility of academic staff to teach and/or do research outside his/her country of residence is on the increase due to the expanding global market for students and academic staff (Altbach, Reisberg, & Rumbley, 2010, p. 3). Both student and academic mobility could be relevant for this research, as one of the aims of the planned curriculum is that it should be internationally recognised. The possibility of international users needed to be kept in mind during the design process. The

candidate was however cognisant of the fact that this curriculum would be designed for a country facing both first- and third-world realities. The delivery of OT-SI services would therefore mainly be relevant for countries facing challenges similar to those of South Africa. Nevertheless, international presenters could not be excluded, as one of the strengths of the current SAISI courses is that they make use of acknowledged international sensory integration experts to assist in the presentation of courses. These possibilities needed to be considered during the design process. The Price Cooper Waterhouse report also highlights international academic opportunities/experiences as part of addressing academic quality (PricewaterhouseCoopers, 2014, p. 18) and thus supports the above conclusions.

Altbach, Reisberg and Rumbley address the importance of the knowledge economy in the Trend report (2010, p. 2). They acknowledge the evolving importance of the service delivery sector in this domain, which in turn emphasises the role of higher education. This point is of specific relevance for this study, as the degree in question is designed for specialised service delivery. It will contribute to the knowledge economy, not only in the field of occupational therapy and sensory integration but also in the field of curriculum design and design science research. The PricewaterhouseCoopers report also talks of “the evolving global higher education market” (PricewaterhouseCoopers, 2014, pp. 17,18). It acknowledges the “international demand for a highly skilled and knowledgeable workforce”, and discusses the current processes in Europe and the United States. These involve not only obtaining a basic degree, but also aiming for higher-level degrees, as this is where high-level skills are cultivated. Involvement in research is mentioned as one of the activities that contribute to the attainment of high-level skills. This curriculum will speak to this trend, as it will be for a higher-level degree, focused on obtaining specialist skills and contributing to research in the field.

A last aspect relevant to this research in the international higher education domain is the international competitive research environment. Quality research is a sought-after commodity in higher education (Altbach, Reisberg, & Rumbley, 2010, p. 14). The Trend report clearly states that there is a growing need for academic institutions and the private

sector to combine their efforts to further research. The relevance for the present study is that users of this curriculum will also be from the private sector and could thus contribute to the production of further knowledge in the field of occupational therapy and sensory integration, since a part of the curriculum will include research activities.

In the literature on the international higher education arena it was noticeable that, although there are changes of focus and challenges, certain trends have remained applicable over the last 17 years. This was evident in the 2009 UNESCO report (Altbach, Reisberg, & Rumbley, 2010), which addressed trends in higher education from 1998 to 2009, and in the New Media Consortium Horizon Report: Higher Education Edition (Johnson, Becker, Estrada, & Freeman, 2015). The candidate focused on those trends which were relevant and important for her research, including technology, funding, student mobility, the knowledge economy and research. Moving away from the international arena, the next section will focus on professional higher education as it is relevant for this research in the profession of occupational therapy.

The following is a summary of perspectives in the literature reviewed in this section which could potentially contribute to design requirements and design propositions. Further summaries will be given, where relevant, at the end of the sections throughout this chapter. In the first column, an indication is given whether the candidate reasoned that a particular section could potentially contribute to a design requirement or a design proposition. In the second column a summary of the perspective is provided, while in the third column the relevant resources are given.

DProp	Consider use of technology for added opportunities of blended learning (flexibility, the effectiveness of virtual learning environments, the possibilities of social activities and critical thinking experiences) and the possibility of engaging off campus, and importantly, the option to choose from best practices.	<ol style="list-style-type: none"> 1. (Johnson, Becker, Estrada, & Freeman, 2015, pp. 16,17) 2. (PricewaterhouseCoopers, 2014, p. 3)
DProp	Accounting of curriculum costs must be considered throughout.	<ol style="list-style-type: none"> 1. (PricewaterhouseCoopers, 2014, p. 3)
DProp	Consideration of student and academic mobility for possible users as well as lecturing staff.	<ol style="list-style-type: none"> 1. (Altbach, Reisberg, & Rumbley, 2010, p. 3)

DReq	Role of research in knowledge economy and global competitiveness needs to be considered throughout.	<ol style="list-style-type: none"> 1. (Pricewaterhouse Coopers, 2014, pp. 17,18) 2. (Altbach, Reisberg, & Rumbley, 2010, p. 14) a
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DProp = Design Proposition

DReq = Design Requirement

2.4.2. Higher Education in South Africa

Higher education in South Africa has undergone a transformation since the early 1990s, especially since 1997 with the release of White Paper 3: A Programme for Higher Education Transformation (South African Government, 1997). The aims of higher education as stipulated in the White paper 3 (South African Government, 1997, pp. 3,4) are to:

- *“contribute and support the process of societal transformation”, “meet the learning needs and aspirations of individuals through the development of their intellectual abilities and aptitudes throughout their lives”,*
- *“address the development needs of society and provide the labour market, in a knowledge-driven and knowledge-dependent society, with the ever-changing high-level competencies and expertise necessary for the growth and prosperity of a modern economy”,*
- *“contribute to the socialisation of enlightened, responsible and constructively critical citizens”, and*
- *“contribute to creation, sharing and evaluation of knowledge”.*

A qualification such as the intended professional master’s degree in sensory integration would meet an existing need of occupational therapists for specialisation in this field. It would give them “high-level competencies and expertise” and support them in becoming “enlightened, responsible and constructively critical citizens”, since all these attributes would be addressed in the curriculum (South African Government, 1997, pp. 3,4). This would be designed to train occupational therapists’ able to “create, share and evaluate knowledge”, and the research component in the curriculum would specifically address these aspects (South African Government, 1997, pp. 3,4).

Hay and Marais offer a comprehensive summary of the focus of the current higher education in South Africa with their statement that “responsible and productive citizenship” is emphasised throughout the transformation process of higher education (Hay & Marais, 2011, p. 236). The Higher Education Qualification Framework (HEQF) of 2007 “strongly emphasises the design of academic qualifications that provide graduates with intellectual capabilities and skills that may empower graduates, enrich society and enhance the economic and social development” (Hay & Marais, 2011, p. 232). This core “requirement” of higher education in South Africa needed to be incorporated in the design of this curriculum.

Central to the transformation process of higher education in South Africa were two “broad challenges”. These were to address “inequities of the past” and to meet the demands set by an “economically competitive global society” (Le Grange, 2009, p. 108). The second challenge by inference also acknowledges that South African universities recognize the importance of the international world. This was highlighted in 2000 in a publication of the Council on Higher Education (CHE) which affirmed that “higher education must play a central role in meeting the difficult realities of international competition in an environment of rapid global change, driven, as it is, by momentous changes in information and knowledge systems” (as quoted by Le Grange in “The University in a Contemporary Era”, 2009, p. 108). Of specific relevance to this research is that occupational therapists who successfully complete this qualification will be able to contribute to addressing developmental needs, especially in the context of a society in which everyone has the right to develop and perform optimally. An optimally developed adult becomes an active contributor to the economy. Children are the future of any nation and if the training of occupational therapists in a specialised field of sensory integration can support those who experience sensory integration challenges (and adults too), the result will be an enhancement of occupational performance and quality of life. In turn, a contribution will be made both to the developmental needs of the society and in the long run to the economy.

DProp	Qualifications must invest in students' intellectual competencies and skills that will contribute to society and support economic and social development	(Hay & Marais, 2011, p. 232)
DProp	Must address realities of international competition	(Le Grange, 2009, p. 108)

DProp = Design Proposition

DReq = Design Requirement

2.4.2.1. *The Council on Higher Education, National Qualification Framework, and the South African Qualification Authority*

The CHE in South Africa is an independent statutory body. It has the functions of providing advice to the Minister of Higher Education and Training on all aspects of higher education policy, assuring quality in higher education (inclusive of programme accreditation), and monitoring the higher education system and the advancement of higher education in South Africa (Council on Higher Education, 2017).

South Africa has a National Qualifications Framework (NQF) approved by the Minister of Higher Education and Training. The classification, registration and publication of qualifications are regulated by the NQF, under the jurisdiction of the South African Qualifications Authority (SAQA) (South African Qualifications Authority, 2016). SAQA is responsible for policy development and for establishing criteria for “registering standards and qualifications on the NQF on the recommendation of the CHE” (Council for Higher Education, SA, 2013, pp. 12, 13). SAQA is also responsible for the recognition of professional bodies such as the Health Professions Council of South Africa (HPCSA) and their qualification outcomes. It is relevant to this research as the qualification in question will be a Professional Master’s Degree in Occupational Therapy. The HPCSA and Occupational Therapy are further reviewed under 2.5.

The NQF allows for nine qualification types within six levels (some levels have more than one qualification type). Each type has a “unique descriptor stating its purpose and how it relates to other qualification types” (South African Government, 2007, pp. 11,12). Qualification descriptors include the NQF “exit level”, “credit-rating”, “purpose and characteristics of qualification type” (South African Government, 2007, p. 12). The “level

descriptors and qualification descriptors” state the generic learning outcomes, but the proposed curriculum will define the “learning that is likely to be necessary to achieve the intended outcomes” (South African Government, 2007, p. 8). Level descriptors form “the outermost layer of qualification specification” and each level is intended to “describe the generic nature of learning achievements and their complexity” (Council on Higher Education, SA, 2013, p. 18). They are thus broad qualitative statements against which more specific learning outcomes can be compared and set (Council on Higher Education, SA, 2013, p. 18). Credits allocated to each qualification type are indicated by the “notional hours” of study required to attain the qualification (“10 notional study hours” are “equivalent to one credit”) (South African Government, 2007, p. 8). Credits are made up of relevant “units of learning” (subjects or modules), each with its own allocated credits, which mount up to the total qualification credit. Each “unit of learning” will have a “unit standard” which will describe “the end points of learning” for which students will be credited, once they have successfully achieved it (South African Qualifications Authority, 2001, p. 22). All NQF specifications relating to this specific qualification type, credits and modules will need to be accounted for in the design of this specific curriculum.

The education system in South Africa is committed to an outcomes-based approach. This was a deliberate choice made to address the inequities of the past education system. The goal was to “achieve integration and coherence within the system” (Nkomo, 2000, p. 10). According to Spady (1994), as cited in Nkomo (2000, p. 11), outcomes-based education “means starting with a clear picture of what is important for students to be able to do, then organising curriculum instruction and assessment to make sure this learning ultimately happens”. According to Spady (1999), outcomes-based education involves adhering to four principles: (1) There needs to be “...clarity on the learning outcomes...” students will need to demonstrate; (2) The design of a curriculum needs to start with identifying the abilities, skills, knowledge and attitudes students will ultimately attain, in other words a “design-down/build-back approach” must be followed; (3) “high expectations” of what the students will be able to attain need to be set in the outcomes; and lastly (4) there should be “expanded opportunities” for students (Spady (1999), as cited in Nkomo, 2000, p. 11). The NQF takes a “nested approach to qualifications design” (South African Government,

2007, p. 7), requiring a progression from generic to specific outcomes. CHE documents clearly state that “within a nested approach to standards development, qualification specification requires a movement from generic to specific outcomes” (Council on Higher Education, SA, 2013, p. 13). The level descriptors give the “generic standards”, while the “most specific standards are found in the programmes that lead to qualifications” (Council on Higher Education, SA, 2013, p. 13). In the specific outcomes, the “actions, roles, knowledge, understanding, skills, values and attitudes” expected from a student should, among other factors, be clearly specified, as they not only give clarity on competencies expected of the student but also form the basis for the assessment criteria (South African Qualifications Authority, 2001, p. 21). Outcomes also need to include “particular contexts for performance” for the identified competencies (South African Qualifications Authority, 2001, p. 16). The fact that the South African education system uses an outcomes-based approach has obvious relevance for this research, since the approach to the design of the curriculum will need to be founded on this.

DReq	Curriculum needs to be designed according to an outcomes-based approach.	(Nkomo, 2000, p. 10).
DReq	Consult and align the generic learning outcomes of the curriculum with the NQF level descriptors and qualification descriptors.	(South African Government, 2007, pp. 11,12)
DReq	Specific learning outcomes need to be compared to and anchored in the relevant level descriptors.	(Council for Higher Education, SA, 2013, p. 18).
DReq	Designed programme must state the learning that is necessary to achieve the intended outcomes.	(South African Government, 2007, p. 8)
DReq	Credit allocation needs to be done in terms of modules, mounting up to the total qualification credit.	(South African Government, 2007, p. 8)
DProp	Start curriculum design by identifying the knowledge, skills and attitudes that students will ultimately attain.	(Spady, 1999 In Nkomo, 2000, p. 11)
DProp	Develop clear outcomes that specify expected competencies, form the basis of the assessment criteria, and that also to refer to particular contexts for performance.	(Spady, 1999 In Nkomo, 2000, p. 11) (South African Qualifications Authority, 2001, p. 16 & 21)
DReq	Set expectations that students need to attain in the outcomes.	(Spady, 1999 In Nkomo, 2000, p. 11)

DProp = Design Proposition

DReq = Design Requirement

2.4.2.1.1. NQF Level Nine outcomes

The HEQSF (Council on Higher Education, SA, 2013, p. 38) specifies that a Master's degree (Professional) should be a postgraduate qualification type set at a NQF Exit Level 9. The outcomes prescribed for NQF Level Nine are taken directly from the Level Descriptors for the South African National Qualifications Framework (South African Qualifications Authority, 2012, pp. 11,12) as these outcomes will guide the specific outcomes to be developed for the curriculum during the design process:

- a. Scope of knowledge, in respect of which a learner is able to demonstrate specialist knowledge to enable engagement with and critique of current research or practices, as well as advanced scholarship or research in a particular field, discipline or practice.*
- b. Knowledge literacy, in respect of which a learner is able to demonstrate the ability to evaluate current processes of knowledge production, and to choose an appropriate process of enquiry for the area of study or practice.*
- c. Problem solving, in respect of which a learner is able to demonstrate the ability to use a wide range of specialised skills in identifying, conceptualising, designing and implementing methods of enquiry to address complex and challenging problems within a field, discipline or practice, and an understanding of the consequences of any solutions or insights generated within a specialised context.*
- d. Ethics and professional practice, in respect of which a learner is able to demonstrate the ability to make autonomous ethical decisions which affect knowledge production, or complex organisational or professional issues, and the ability to critically contribute to the development of ethical standards in a specific context.*
- e. Accessing, processing and managing information, in respect of which a learner is able to demonstrate the ability to design and implement a strategy for the processing and management of information, in order to*

- conduct a comprehensive review of leading and current research in an area of specialisation to produce significant insights.*
- f. Producing and communicating information, in respect of which a learner is able to demonstrate the ability to use the resources of academic and professional or occupational discourses to communicate and defend substantial ideas that are the products of research or development in an area of specialisation, and use a range of advanced and specialised skills and discourses appropriate to a field, discipline or practice, to communicate with a range of audiences with different levels of knowledge or expertise.*
 - g. Context and systems, in respect of which a learner is able to demonstrate the ability to make interventions at an appropriate level within a system, based on an understanding of hierarchical relations within the system, and the ability to address the intended and unintended consequences of interventions.*
 - h. Management of learning, in respect of which a learner is able to demonstrate the ability to develop his or her own learning strategies, which sustain independent learning and academic or professional development, and can interact effectively within the learning or professional group as a means of enhancing learning.*
 - i. Accountability, in respect of which a learner is able to demonstrate the ability to operate independently and take full responsibility for his or her own work, and, where appropriate, to account for leading and initiating processes and implementing systems, ensuring good resource management and governance practices.*

SAQA does not prescribe how these outcomes should be integrated into the curriculum outcomes. However, they do require that it should be made clear in the outcomes and assessment criteria how the assessment of these outcomes will take place. The “methodology of how the critical outcomes will be developed within context, is in the hands of the practitioners” (Nkomo, 2000, p. 20).

DReq	NQF Exit Level 9 outcomes must guide the specific outcomes and assessment developed for the curriculum.	(South African Qualifications Authority, 2012, pp. 11,12)
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DProp = Design Proposition

DReq = Design Requirement

2.4.2.1.2. SAQA and assessment

SAQA describes outcomes as the “demonstrable and assessable end products of a learning process”. The design of assessment activities for this curriculum therefore needed to be guided by SAQA policy. According to Nkomo, SAQA has “purposefully avoided direct statements of how particular processes must be done or how particular outcomes must be achieved”, but has rather provided “the underpinning attitudes and principles” that should drive assessment (Nkomo, 2000, p. 21). Assessment activities must include “a range of formative and summative assessment such as portfolios, simulations, workplace assessments and also written and oral examinations” (Nkomo, 2000, p. 22).

Formative assessment is that which supports and enhances learning, and there are various forms of such assessment. Any communication between the educator and the student which recognises and responds to the learning of the student and/or advances such learning is recognised as a formative assessment (Council for Higher Education, 2011, p. 42). More formal assessments, where feedback is given after the assessments, are also regarded as formative assessment. These also prepare students for summative assessments. The latter are used to measure a student’s attainments against a set standard at a certain point in time in the curriculum (Council for Higher Education, 2011, p. 43). According to the CHE, many South African universities make use of continuous assessments. These involve a series of assessments that accumulate towards a final mark as the student progresses, as opposed to a final examination at the end of a course (Council for Higher Education, 2011, p. 43). Types of assessment appropriate to this study will be identified and imbedded in the curriculum during the design process.

Assessment criteria need to be developed in line with the competencies described in the specific outcomes (cf. previous paragraph) and should also describe the “level of complexity and quality” of the competencies and the “context of and conditions under which demonstration should occur” (South African Qualifications Authority, 2001, pp. 21,22). They will thus be “statements that describe the standard” of expected performance (South African Qualifications Authority, 2001, p. 21) and will also form part of the projected curriculum. Assessment will be further discussed in the section on “Relevant Perspectives on Curriculum and Curriculum Development” (2.6.1).

The aspects of higher education in South Africa reviewed up to now supplied relevant background on the Council of Higher Education, the NQF and SAQA. In the next section, the relevance of the new Higher Education Qualifications Sub-Framework (HEQSF) for this research will be reviewed.

DReq	Underpinning competencies that will be assessed must be integrated in the specific outcomes.	(Nkomo, 2000, p. 21).
DReq	Types of assessments need to be identified and integrated into the curriculum.	(Council for Higher Education, 2011, p. 43)
DReq	Expected standard of performance, quality and where relevant the context and conditions must be described.	(South African Qualifications Authority, 2001, p. 21)
DReq	Assessment must be inclusive of a range of assessment activities.	(Nkomo, 2000, p. 22)

DProp = Design Proposition

DReq = Design Requirement

2.4.3. The revised Higher Education Qualifications Sub-Framework

The Minister of Higher Education and Training approved the revised Higher the HEQSF in August 2013 (Council on Higher Education, SA, 2013). This framework presents an outline and descriptors for the different types of qualifications that represent the most recent formal qualifications in the South African higher education system. The HEQSF acknowledges “three broad qualification progression routes with permeable boundaries, namely, vocational, professional and general routes” (Council on Higher Education, SA, 2013, p. 11). The professional route in particular is relevant to this research.

The need for emerging skills and knowledge is, among other factors, acknowledged and addressed in the HEQSF and specifically “with respect to professionally-orientated qualifications” (Council on Higher Education, SA, 2013, p. 5). Since 2013, the HEQSF has provided for a professional master’s qualification with the specific objective of meeting the need for high-level skills within professions. This is not a research-based qualification, but one which requires the high-level cognitive engagement needed to advance knowledge towards a profession and specialised services. This new qualification type is eminently suitable for a professional master’s degree for occupational therapists who aspire to specialise in sensory integration as part of their professional pathway, as no qualification currently exists at this level in South Africa. A relevant Bachelor Honours Degree is set as a minimum admission requirement for this qualification (Council on Higher Education, SA, 2013, p. 39).

The “Master’s Degree (Professional)” is pitched at “NQF Level 9”, specifying a “minimum of 180 total credits” (Council on Higher Education, SA, 2013, p. 38). The degree describes the broad fields of the programme and a maximum of one specific qualifier may be added. This means that the title of the new qualification will indicate its specialisation in ‘Sensory Integration’. This will need to be accounted for during the design process. The primary function of a professional master’s degree is “to educate and train graduates who can contribute to the development of knowledge at an advanced level such that they are prepared for advanced and specialised professional employment” (Council on Higher Education, SA, 2013, p. 38).

The requirements set “for the successful completion of the professional Master’s Degree are as follows” (Council on Higher Education, SA, 2013, p. 38):

- *“Successful completion of a coursework programme requiring a high level of theoretical engagement and intellectual independence as well as demonstration of the ability to relate knowledge to the resolution of complex problems in appropriate areas of professional practice”,*
- *“a professional Master’s Degree must include an independent study component that comprises at least a quarter of the total credits, which must be at NQF level*

9, consisting of either a single research or technical project or a series of smaller projects demonstrating innovation or professional expertise”.

The HQSF further specifies that successful candidates must be able to (Council on Higher Education, SA, 2013, p. 38):

- *“deal with complex issues both systematically and creatively”,*
- *“design and critically appraise analytical writing”,*
- *“make sound judgements using data and information at their disposal and communicate their conclusions clearly to specialist and non-specialist audiences”,*
- *“demonstrate self-direction and originality in tackling and solving problems”,*
- *“act autonomously in planning and implementing tasks with a professional orientation”,*
- *“and continue to advance their knowledge, understanding and skills relevant to a particular profession”.*

Sensory integration is acknowledged as a specialist field in occupational therapy and therefore requires the abilities specified above in the delivery of specialist services. However, the candidate argues that delivering sensory integration services in the diverse contexts and environments in South Africa also calls for specialist knowledge, skills and attitudes. If an occupational therapist using sensory integration is not trained to understand Ayres Sensory Integration® (ASI®) and adapt it with the necessary reasoning and creativity, he or she could easily revert to basic services, such as using basic observations for assessment and implementing a sensory-motor stimulation program for intervention. Advanced knowledge and skills are needed to apply the principles of ASI® effectively in diverse contexts and environments. It will therefore be necessary to consider all of the above requirements and specifications in the design of the curriculum.

Recognition of prior learning (RPL) is also addressed in the HEQSF. It states that “institutions may recognise other forms of prior learning as equivalent to the prescribed

minimum admission requirements and may recognise other forms of prior learning for entry or granting advanced standing in the given programmes” (Council on Higher Education, SA, 2013, p. 22). This may become increasingly relevant as national and international training programmes in the field of sensory integration become available and qualify for RPL. This possibility will be discussed and accounted for during the design process.

In conclusion, the professional master’s degree is a novel addition to the South African qualifications framework, designed with the primary purpose of educating and training graduates who can contribute to the development of knowledge and skills at an advanced level, so that they will be prepared for advanced and specialised professional employment (Council for Higher Education, SA, 2013, p. 34). Sensory integration is one of the specialist fields in occupational therapy that has developed into a particular focus area, based on advanced theory and professional practice, and is thus well positioned for professional master’s degree studies. The demand for such a master’s degree has already been established, and the challenge that universities face is to develop a curriculum for training, one which not only adheres to the requirements of Higher Education (HE) in South Africa but will also bridge the realities of the South African context and the people who are in need of services.

DReq	Master’s Degree (Professional)” is on NQF Level 9.	(Council on Higher Education, SA, 2013, p. 38)
DReq	A minimum admission requirement for this qualification is a relevant Bachelor Honours Degree.	(Council on Higher Education, SA, 2013, p. 39)
DReq	Qualification must be professionally orientated and geared towards high-level cognitive engagement in order to advance knowledge towards a profession and specialised services.	(Council on Higher Education, SA, 2013, p. 5)
DReq	Must have a minimum of 180 total credits.	(Council on Higher Education, SA, 2013, p. 38)
DReq	Degree must describe the broad fields of the programme and a maximum of one specific qualifier may be added.	(Council on Higher Education, SA, 2013, p. 38).

DReq	<p>Graduates exiting at NQF level 9, must be able to contribute to development of knowledge at an advanced level and be shaped for advanced and specialised professional employment:</p> <ul style="list-style-type: none"> • high level of theoretical engagement, • intellectual independence, • apply knowledge to solve complex problems in relevant areas of professional practice, • attend to complex matters in an efficient and creative manner, • compose and critically appraise analytical documents • use information and data to make sound judgements and communicate thereon to various audiences, • be self-directed and innovative in problem solving, • plan and implement tasks independently and with autonomy, • continue with professional development regarding knowledge, understanding and skills. 	(Council on Higher Education, SA, 2013, p. 38).
DReq	Qualification must include either a single research or technical project or a series of smaller projects demonstrating innovation or professional expertise comprising at least a quarter of the total credits.	(Council on Higher Education, SA, 2013, p. 38)
DProp	Recognition of prior learning should be considered where relevant and deemed to be equivalent to the prescribed minimum admission requirements and consideration of recognition of other forms of prior learning for entry or granting advanced standing in the programme.	(Council on Higher Education, SA, 2013, p. 22)

DProp = Design Proposition

DReq = Design Requirement

2.5 Professional organisations and their relevance

The curriculum designed during this study falls within the health sciences, and as such certain professional bodies must be recognised in terms of their relevance for the design of such a curriculum. The three applicable professional bodies that will be discussed are the World Federation of Occupational Therapists, the Health Professions Council of South Africa, and the International Council for Education in Sensory Integration.

2.5.1 World Federation of Occupational Therapists and post-graduate training

The mission of the World Federation of Occupational Therapists (WFOT) is to promote “occupational therapy as an art and science internationally”. It supports the development,

use and practice of occupational therapy worldwide, demonstrating its relevance and contribution to society (<http://www.wfot.org/AboutUs/FundamentalBeliefs.aspx>, n.d.).

In 2008, WFOT published a document on “Entry Level Competencies for Occupational Therapists”. It was designed to “assist in the development and promotion of a standard of excellence in occupational therapy practice and to assist and guide the development and monitoring of occupational therapy practice competencies within WFOT member countries” (<http://www.wfot.org/AboutUs/FundamentalBeliefs.aspx>, n.d.). However, the same support was not given for postgraduate-level qualifications. Nevertheless, WFOT do acknowledge that “advanced and specialist practise is important in the changing world...to ensure that occupational therapy practise is relevant and sustainable”, and have issued a final draft publication of a position statement on “Specialisation and Advanced Occupational Therapy Competencies” (World Federation of Occupational Therapists, 2014). In this, WFOT states that it “expects that any member association that recognises occupational therapy advanced or specialist’s competencies in their country must have a structure in place by which to accredit such levels of practice” (World Federation of Occupational Therapists, 2014). They further recommend five “components” that should be adhered to, of which four are relevant to this research (the fifth has relevance for doctoral studies) (World Federation of Occupational Therapists, 2014):

1. An appropriate recognised occupational therapy qualification should be held.
2. Experience of at least three years with at least half of these years in the area of speciality/advanced practice.
3. Structured supervision should be included as well as the opportunity to supervise.
4. A “professional profile” that is inclusive of competencies (“knowledge, skills and attitude”), “professional or scientific articles”, “presentations at conferences / congresses” and “workplace innovations and initiatives; professional development” should be used.

The above recommendations by WFOT will be considered during the design of the curriculum.

WFOT also states that member countries must build “the components of the structure” of the programme/curriculum “on the local context”, “to suit local context, considering the need for occupational services in that country” (World Federation of Occupational Therapists, 2014). The design of a local, contextually relevant professional master’s degree in sensory integration is a core ‘distinction’ to which the candidate will be striving in the design of this curriculum.

DReq	Entry requirement of appropriate recognised occupational therapy qualification.	(World Federation of Occupational Therapists, 2014)
DProp	At least three years of experience and at least half of this time working in the area of speciality/advanced practice.	(World Federation of Occupational Therapists, 2014)
DProp	Structured supervision should be included as well as the opportunity to supervise.	(World Federation of Occupational Therapists, 2014)
DProp	Curriculum must be ‘built’ considering the local context and relevant for service delivery needs of the country.	(World Federation of Occupational Therapists, 2014)
DProp	A professional profile must be kept, indicating competencies, publications, presentations, workplace innovations and initiatives; and professional development activities.	(World Federation of Occupational Therapists, 2014)

DProp = Design Proposition

DReq = Design Requirement

2.5.2. Health Professions Council of South Africa (HPCSA)

The HPCSA is a statutory body governed by the Health Professions Act 56 of 1974. The HPCSA “guides and regulates the health professions in the country in aspects pertaining to registration, education and training, professional conduct and ethical behaviour, ensuring continuing professional development, and fostering compliance with healthcare standards” (Health Professions Council of South Africa, n.d.). The HPCSA “governs and regulates” several professional boards, of which the board for Occupational Therapy, Medical Orthotics, Prosthetics and Arts Therapy” is one (Occupational Therapy, Medical Orthotics, Prosthetics & Arts Therapy Professional Board, n.d.). All educational

institutions offering recognised qualifications in occupational therapy must be evaluated and accredited by the HPCSA every five years (Health Professions Council of South Africa, 2013, p. 4). The HPCSA acts as “quality assurance body for the education and training in the professions within the ambit of the respective professional boards” (Health Professions Council of South Africa, 2013, p. 3). Currently postgraduate programmes are not formally part of the accreditation process but an accreditation team to take note of programmes presented at postgraduate level and do comment on it.

Of specific relevance for this research is that, according to the CHE, professional bodies must be consulted to determine whether a particular qualification – current or proposed – meets the requirements for professional registration, membership or licensing. (Council on Higher Education, SA, 2013, p. 13). This means that any professional qualification offered by a higher education institution must be recognised by the relevant professional body. It is also stipulated in the Health Professions Act 56 of 1974 that before any training can be offered by an educational institution an application must be submitted to the relevant professional board (South African Government, 1974, p. 24). Although the application process will not form part of this research, it was important to ensure that the designed curriculum adhered to all necessary requirements in order to secure a smooth application process once the curriculum was ready to be submitted to all the processes required for the registration of a qualification.

DReq	Professional bodies must be consulted to determine whether the qualification adheres to requirements and recognition	(Council on Higher Education, SA, 2013, p. 13)
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DProp = Design Proposition

DReq = Design Requirement

2.5.2.1. The HPCSA, Professional Board of Occupational Therapy and Specialisation

The curriculum that was to be designed fell within one of the fields of “speciality” of occupational therapy, that of sensory integration. Although no formal register for specialised areas exists in South Africa, there is an informal recognition of “speciality” areas in the profession, especially for those areas for which postgraduate courses exist (Crous, Hanekom, Jansen van Rensburg, Smallberger, & Sheik Ismail, 2016, p. 13).

In the United States, the American Occupational Therapy Association does recognise “Specialty Certified Practitioners” (The American Occupational Therapy Association, 2017). Specialisation in the profession of occupational therapy in South Africa has been the subject of a longstanding debate with as yet no definite outcome (Crous, Hanekom, Jansen van Rensburg, Smallberger, & Sheik Ismail, 2016, p. 11). The HPCSA is obliged by law to keep “registers in respect of persons registered in terms of this Act, and must enter in the appropriate register the name, relevant contact details, qualifications, date of initial registration and other applicable particulars (including the registration category in which they hold registration and the name of their speciality, subspecialty, professional category or categories, if any) as the relevant professional board may determine” (South African Government, 1974, p. 25). The Professional Board of Occupational Therapy Medical Orthotics and Prosthetics and Arts Therapy has launched several investigations into the need for a specialist register for occupational therapists. The last of these was as recent as 2014, when heads of occupational therapy departments of educational institutions, occupational therapy associations and societies were all approached by the HPCSA to submit their views, concerns, and suggestions on the issue of specialisation through postgraduate qualification. The aim was to “inform the Board’s participation in an Inter-Professional Board deliberation and as such shape developments with the view of improving practice” (Professional Board for Occupational Therapy, 2014). This matter is still ongoing, with no outcome to date.

During 2016 a research project was completed by fourth-year occupational therapy students on “South African occupational therapists’ views and preferences regarding specialisation in occupational therapy” (Crous, Hanekom, Jansen van Rensburg, Smallberger, & Sheik Ismail, 2016). The aim of their research was to “investigate the views and preferences of South African occupational therapists regarding specialisation, which may better inform the occupational therapy regulatory body to assist in the development of a specialisation structure for occupational therapy” (Crous, Hanekom, Jansen van Rensburg, Smallberger, & Sheik Ismail, 2016, p. 4). Their findings indicated “that there is a need for specialisation within the South African context” as 83.3% of the

respondents were in favour of “additional qualifications” (Crous, Hanekom, Jansen van Rensburg, Smallberger, & Sheik Ismail, 2016, p. 69). In the online survey that was used for this research, 243 of the 536 respondents felt that sensory integration should be one of the specialist areas which should form part of a specialist structure recommended to the HPCSA (Crous, Hanekom, Jansen van Rensburg, Smallberger, & Sheik Ismail, 2016, p. 78). Although sensory integration as a specialist area was in the “middle range” of the data received, it was noteworthy for the candidate that it was a specialist field of choice for 45.3% of the candidates. One of the final recommendations made to the HPCSA by the researchers of this study was that “a Master’s degree in Occupational Therapy and accredited courses in one specific field of practice may be regarded as possible criteria to warrant registration as an occupational therapy specialist” (Crous, Hanekom, Jansen van Rensburg, Smallberger, & Sheik Ismail, 2016, p. 82).

The above discussion provides a context for the current situation in South Africa for specialists in occupational therapy, relevant here as this research concerns the design of a professional master’s curriculum with a specialist designator. The last recommendation from the research by Crous, Hanekom, Jansen van Rensburg, Smallberger and Sheik Ismail (2016) is of specific importance for this study, as the design of a Professional Master’s degree in sensory integration is in line with their recommendation.

DProp	Informing the Professional Board of Occupational Therapy of the designed curriculum and obtain recognition thereof.	(Crous, Hanekom, Jansen van Rensburg, Smallberger, & Sheik Ismail, 2016, p. 82)
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DProp = Design Proposition
DReq = Design Requirement

2.5.3. International Council for Education in Sensory Integration

The purpose of the International Council for Education in Sensory Integration (ICEASI) is “to provide an inclusive, supportive community, that promotes best practice and work to raise standards of education and training in Ayres Sensory Integration®” (International Council for Education in Ayres Sensory Integration, 2016, p. 1). One of the objectives of ICEASI is the standardisation of education internationally, leading to “ICEASI

acknowledged International Certification in Ayres Sensory Integration®” (International Council for Education in Ayres Sensory Integration, 2016, p. 1).

ICEASI has reached consensus with their international members on four levels of training that will be recognised by ICEASI as comprising an overall professional development pathway for ASI® practitioners (ICEASI, 2016, pp. 2-5). The four levels are as follows:

Level 1: ‘Novice’ or ‘trainee’, where an individual has attended workshops or introductory courses on ASI® and has a basic understanding of sensory integration.

Level 2: This is the “stepping-on point” for professional training which is accredited/ certified by ICEASI. Once the agreed-upon courses have been completed and learning has been formally assessed, the individual emerging from this level could be seen as an ‘Ayres-Sensory Integration practitioner’ on an advanced level. Level 2 training should be equivalent to a postgraduate diploma.

Level 3: This level is described as a ‘specialist’ practitioner and is at a master’s degree level.

Level 4: This level is at a ‘Fellow’ or ‘Consultant’ level, where the individual will have a substantial leadership record of service to ASI® through either/or a combination of clinical expertise/knowledge, research outputs/contributions and education outputs/contributions.

Level 3 has relevance for this research as the descriptors are at a master’s level and indicate what would be the international expectation for a clinician at a master’s level. The descriptors according to the ICEASI document (ICEASI, 2016) are as follows:

The individual at the end of Level 3 will have:

- *a systematic understanding of the breadth of ASI®-related and underpinning knowledge, with a critical awareness of current problems*

and/or new insights, informed by the forefront of their clinical field / area of professional practice. The areas of professional practice / clinical fields may be helpfully construed around one or more of the three pillars of research as described by Schaaf, et al in their article “State of the Science: A Roadmap for Research in Sensory Integration” (2015) which are practice, education, and advocacy. Research itself is seen as the fourth area of professional practise.

- *Demonstrate conceptual understanding that enables the student to critically evaluate current research, as related to ASI®.*
- *Demonstrate originality in how they apply knowledge, together with a practical understanding of how established techniques of research and enquiry are used to create and interpret knowledge in their selected pillar.*
- *Evaluate methodologies and develop critiques of them and identify gaps as applied to the four pillars*
- *Communicate effectively and appropriately on complex ASI®-relevant material to a range of audiences, dependent on need, and as applied to the four pillars*

The above descriptors of ICEASI will need to be considered in the design of the curriculum, as one of the aims of this curriculum is that it should adhere to international standards and thus be internationally acknowledged. The current acknowledged international body setting standards is ICEASI.

DReq	Adherence to international standards set by ICEASI: <ul style="list-style-type: none"> • understanding of the breadth of ASI®-related and underpinning knowledge, • critical awareness of current problems and/or new insights within field, • conceptual understanding that enables critical evaluation of current research, as related to ASI®. • originality in applying knowledge, together with practical understanding of how established techniques of research 	(ICEASI, 2016)
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	<p>and enquiry are used for knowledge creation and interpretation,</p> <ul style="list-style-type: none"> • Evaluate methodologies and critical appraisal thereof, together with identification of gaps as applied to the four pillars practice, research, education, and advocacy • Communicate effectively on complex ASI®-relevant matters to a range of audiences, dependent on need, and as applied to the four pillars. 	
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DProp = Design Proposition

DReq = Design Requirement

The focus of the next section of the literature review is on curriculum development, since it is “the core business” of this research.

2.6 Curriculum and curriculum development

Many meanings of the word ‘curriculum’ are found in the literature, but for the purpose of this research the candidate will focus firstly on a curriculum in a higher education institution in a specific health sciences department, in a specific field of practice. Van den Akker’s different levels of curriculum and curriculum development are applicable here (Van den Akker, 2013, p. 55). He identifies five levels of curriculums, with the international level as the supra level, the national level as the macro level, the institutional level as the meso level, the classroom as the micro level, while the individual or student level is at the nano level. The curriculum in this study is at a meso level, that is, one which will be delivered at a higher education institution (Van den Akker, 2013, p. 55).

An approach to the meaning of a curriculum, one which not only speaks to the candidate but also to the nature of this research, is offered by Du Toit, when he argues that an academic need to answer three questions, “WHAT can be taught and learned?”, “WHY should we teach and learn in a particular way?” and “HOW can we teach and learn?” (Du Toit, 2011, p. 59). In answering these questions, we also need to answer the question, “What is the ‘course’ of a particular study?” or, in other words, “What is the curriculum in question?” Clements (2007, p. 35), who has conducted research into the development of a “framework for research-based curricula”, also takes the view that a “curriculum is a

written instructional blueprint and set of materials for guiding students' acquisition of certain" knowledge, skills and attitudes.

Van den Akker, as cited in Van den Akker, Gravemeijer, McKenney, and Nieveen (2006, p. 113), offers another perspective by dividing a curriculum into the intended, the implemented and the attained curriculum. The forms in each division of a curriculum and what it contains are presented in Table 2.1.

Table 2.1: Divisions and forms of a curriculum according to Van den Akker

	Forms of curriculums:	Containing:
1. Intended curriculum	1.1. Ideal curriculum	Vision and underpinning philosophy
	1.2. Formal curriculum	Curriculum intentions as prescribed in documents and/or materials
2. Implemented curriculum	2.1. Perceived curriculum	Users interpretations
	2.2. Operational curriculum	As delivered in teaching environment
3. Attained curriculum	3.1. Experiential curriculum	Learning experiences from students' perspective
	3.2. Learned curriculum	Resulting student outcomes

For the purpose of this study, the focus will be on the intended curriculum, with its two forms of an "ideal curriculum" and a "formal curriculum". The aim will be to design a curriculum that will be ready for implementation, that is, ready to be submitted to the institutional and statutory curriculum processes (cf. 2.6.2).

To further assist her in understanding curriculum development and identifying which curricular components should be included in the design of her curriculum, the candidate first reviewed perspectives on curriculum and curriculum development, then curriculums within the health professions. At the end of this chapter, she will also review the perspectives of educational design research on curriculum development, as these have definite relevance to understanding and identifying curriculum components.

2.6.1. Relevant Perspectives on Curriculum and Curriculum Development

To develop a curriculum or, as in the case of this research, to design one through a research process, various approaches as described in the literature could be followed. According to Doll (1974) in Du Toit (2011, p. 61), “there are three major representative curriculum designs” that can be utilised in higher education. They can “be designed around subjects, disciplines or broad fields”; they “can be designed around students”; or “around social problems such as poverty, social justice, health-related issues or real-life situations.” The candidate believed that, given the nature of the educational design research process, all three of these curriculum design ‘areas’ needed to receive attention. Her curriculum will be grounded in the profession of occupational therapy and this will be fundamental to the design process. The decision to design this specific curriculum arose from a health-related need, namely the high incidence of sensory integration difficulties/dysfunctions, especially among children, and the impact these have on their occupational performance (cf. 2.2). Finally, the voices of clinicians will be part of the design process. Their “voices” will be heard giving their opinions and describing their realities, taking into account the possible users of the curriculum. The extent to which each of them will influence the design will be discussed as part of the results, as it is not known at this stage and will only unfold as the structure of the curriculum emerges.

When developing a curriculum, one of the first questions the researcher asks is: “What are the components involved when developing a curriculum?”. Van den Akker developed a model based on the work of Klein ((1991) as cited in McKenney & Reeves, 2012, p. 69), which was published in 2003 (Van den Akker, Gravemeijer, McKenney, & Nieveen, 2006, p. 112). It provides curriculum scholars not only with the components involved in a curriculum but also with the “interconnectedness” and “vulnerabilities” of the different components. Van den Akker’s curriculum is modelled in a spider web format. At the centre of the model is the rationale for the curriculum (Van den Akker, Gravemeijer, McKenney, & Nieveen, 2006, p. 112), with the different elements forming the spokes of the web. “Alignment” and “internal consistency” in terms of the “curricular components (spider web elements)” are emphasised as important factors in “high quality curriculum development” (Van den Akker, Gravemeijer, McKenney, & Nieveen, 2006, p. 112.113). In developing a

coherent curriculum, the designer should always aim for alignment and consistency between the different components or elements of the curriculum, as without these the result can be unbalanced (McKenney & Nieveen, Design research from a curriculum perspective, 2006, p. 70). “Contextual understanding” and its variables in terms of “real-world settings” are indispensable in curriculum design (Van den Akker, Gravemeijer, McKenney, & Nieveen, 2006, p. 121). Contextual variables that the candidate will consider and address during the design process will therefore include the population for whom the curriculum is designed, the resources available for delivering the curriculum, the availability of lecturers, and the reality of the environments where services will ultimately be delivered once the qualification has been obtained.

Curriculum development is dependent on the curriculum developer’s view on how students construct knowledge. Given her view on how students create knowledge, the candidate supports the general philosophical orientation of constructivism. Biggs and Tang (2007, p. 21) summarise this concisely when they state that “learners construct knowledge with their own activities, building on what they already know”. Constructivism dates back to cognitive psychology and Piaget’s work in the 1950s. According to Biggs and Tang (2007, p. 21), through the years it has taken on different paradigms, such as “individual”, “social”, “cognitive” and “postmodern” paradigms. The relevance of these is that they all reinforce the fact that “teaching is not a matter of transmitting but of engaging students in active learning, building their knowledge in terms of what they already understand” (Biggs & Tang, 2007, p. 21). The teaching and learning activities included in the curriculum will need to be designed to foster deep learning. This will include active learning, where students will have to be accountable for their own learning, and for building and reflecting on what they already know.

Another important and critical “building brick” in the development of a curriculum is that of constructive alignment. In their book on ‘Teaching for Quality Learning at a University’ Biggs and Tang (2007, p. 54) discuss the importance of the “design of constructively aligned teaching and assessment”. According to their view (Biggs & Tang (2007, p. 52), constructive alignment is based on “the twin principle of constructivism in learning and

alignment in the design of teaching and assessment". The core of this approach is that learning activities need to be reflected in the intended outcomes and must also be "mirrored" in the teaching and learning activities, as well as in assessments. Constructive alignment will need to be at the core in the design of the curriculum, as not only will the intended outcomes, teaching and learning activities of this specific qualification be constructively aligned but will also have to be aligned with the outcomes described in the level descriptors of SAQA and as prescribed by the HEQSF (as discussed in 2.4.) and those of the already discussed professional bodies (cf. 2.5).

In the design of the intended learning outcomes, the "graduate attributes", the SAQA outcomes, as well as the curriculum outcomes will need to be accounted for. Also, to be imbedded in the outcomes will be the "kinds of knowledge and levels of understanding" students will attain, described by Biggs and Tang as essential components of learning outcomes. Knowledge can be declarative (spoken or written) or functional (knowledge that is "put to work"), and this must be clearly stated in the outcomes (Biggs & Tang, 2007, p. 89). The level of understanding will be addressed in the design of the outcomes by "selecting a verb and a context for demonstrating the desired level" (Biggs & Tang, 2007, p. 89).

In the design of the proposed outcomes, assessment criteria need to be set. According to SAQA, "assessment criteria means the standards used to guide learning and assess learner achievement and/or evaluate and certify competence" (South African Government, 2014, p. 4). The "National Policy and Criteria for Designing and Implementing Assessment for NQF Qualifications and Part-Qualifications and Professional Designations in South Africa" requests adherence to ten "assessment principles". Each of these is to be guided by the following: "validity", "reliability", "integrity", "transparency", "accountability", "fairness", "absence of bias", "sensitivity to language", "credibility" and "assessment range" (South African Government, 2014, p. 14). Guidelines for assessment are also stipulated in the policy (South African Government, 2014, pp. 15-21). The assessment criteria and guidelines of SAQA are relevant to this research since

the candidate will have to adhere to the assessment criteria set in the specific outcomes during the design process and follow the guidelines for implementation.

In her chapter on “Planning teaching and learning: curriculum design and development” in “A Handbook for Teaching and Learning in Higher Education - Enhancing Academic Practice”, Stefani (2009, p. 50) gives eight “key steps to effective course and curriculum design”:

1. *Consider your general aims for the course/programme.*
2. *Write specific learning outcomes (objectives): what do you want the students to learn?*
3. *Plan the assessment framework to match your objectives.*
4. *Plan the content, i.e. sequence of topics/readings.*
5. *Plan the teaching/learning design – what kinds of activities will you and your students engage in together?*
6. *Compile a list of resources.*
7. *Write the course outline, including readings.*
8. *Consider evaluation of the course (formative and summative) and how best evaluation can be carried out.*

In reviewing the guidelines that SAQA gives (Nkomo, 2000) on curriculum development, most of which have been discussed in the section on Higher Education in South Africa (cf. 2.4), the candidate became aware that the constant consideration of relevant key steps as suggested by Stefani (2009, p. 50) would be in accordance with the SAQA framework (Nkomo, 2000, p. 13) and would also offer core components to be considered for the curriculum.

An educational design research approach was taken in this research. It is important to recognise and acknowledge that, within curriculum development and educational design, research curriculums cannot be developed only by investigating all relevant acts, policies and guidelines that inform the “why”, “what” and “how” of curriculums, as prescribed by

the relevant authorities. All the “essential elements” (or components) of a curriculum (McKenney & Reeves, 2012, p. 69) must be considered and investigated. Many “elements” of a curriculum have been described in the literature over the years. The work of Van den Akker, as discussed earlier in this section, is also acknowledged by McKenney and Reeves (McKenney & Reeves, 2012, p. 69). The elements forming the spokes of the web comprise the aims and objectives, content, learning activities, educator roles, materials and resources, grouping, location, time, and assessment. “Alignment” and “internal consistency” between the elements are, as already noted, critical factors in developing a curriculum (Van den Akker, Gravemeijer, McKenney, & Nieveen, 2006, p. 112.113). In educational design research, context is also emphasised in the design of a curriculum and is seen as central to its conceptual terrain. The aim of calculating the context during the design process is to understand and foster meaning-making and includes the relevant historical, cultural, and social contexts (Van den Akker, Gravemeijer, McKenney, & Nieveen, 2006, p. 121). To optimise curricular elements (that form part of the educational design research process), during the design of the proposed curriculum, the candidate’s data generation strategies will include research activities such as obtaining the opinions of international experts on the subject-specific matter, drawing from the successes achieved by the current training courses in sensory integration presented by SAISI, obtaining the views and opinions of South African experts in the field of sensory integration and education, and drawing on the opinions of clinicians and possible users of the curriculum, as well as the opinions of experts in the field of curriculum development in higher education.

DReq	Curriculum will be designed considering the profession of occupational therapy, the students who will be users of the curriculum and will also consider the realities of the South African context.	(Doll in Du Toit, 2011, p. 61)
DReq	Components involved in the curriculum need to be identified.	(Van den Akker, Gravemeijer, McKenney, & Nieveen, 2006, p. 112) (Stefani, 2009, p. 50) (McKenney & Reeves, 2012, p. 69)

DProp	Aspire to alignment and internal consistency between curricular components.	(Van den Akker, Gravemeijer, McKenney, & Nieveen, 2006, p. 112.113)
DProp	Ensure contextual understanding and its variabilities in terms of “real-world settings”.	(Van den Akker, Gravemeijer, McKenney, & Nieveen, 2006, p. 121)
DProp	Teaching and learning activities are constructed according to the curriculum designer’s philosophical view on how students learn: Constructivism: students need to engage in active, deep learning, build their knowledge in terms of what they already understand and reflect thereon.	(Biggs & Tang, 2007, p. 21)
DReq	Constructive alignment is required in the reflection of learning activities in the outcomes, together with an indication of what will be assessed.	(Biggs & Tang, 2007, p. 52)
DReq	Required competencies must be reflected in the learning outcomes.	(Biggs & Tang, 2007, p. 89)
DReq	Standards that will guide learning and assessment must be reflected in the outcomes since they will serve as assessment criteria.	(South African Government, 2014, p. 4)

DProp = Design Proposition

DReq = Design Requirement

2.6.1.1. Curriculum development in Health Professions

The relevant literature on curriculum development in the health professions will now be reviewed. Health sciences education has one major added dimension which needs to be considered and included in the design of a curriculum, that of the ‘external’ institutions, individuals (patients/clients) and clinicians involved in the training process.

According to Lee, Steketee, Rogers and Moran (2013, p. 66), “curriculum development within health professions” is built on two “key conceptual models”, the “behaviourist model”, which is “objective driven” and “linear in approach”, and the “competency-based model”, which is focused on the importance of “individual acquisition of capabilities”. Outcomes-based education also receives substantial attention in their article “Towards a theoretical framework for curriculum development in health professional education” (Lee, Steketee, Rogers and Moran (2013, pp. 66,67). They critically discuss the three approaches and argue that “there remains a lack of a coherent, contemporary theoretical framework to guide the development, review and renewal of curriculum in the health professions” and that “whilst the concept of ‘curriculum’ in and of itself is complex, the

process of developing curriculum to prepare graduates for an equally complex health workforce environment is particularly tricky". In an effort to address the 'complexities' of curriculum development in health care they have developed an "outline of a four-dimensional curriculum framework" (Lee, Steketee, Rogers, & Moran, 2013, pp. 69-71) with the help of an interdisciplinary team. The four dimensions of the framework look respectively at the "why?", "what?", "how?" and "where?" of a curriculum. This approach to curriculum development to a large extent agrees with the approaches already discussed in this section on curriculum and curriculum development.

Specific attention in terms of curriculums in health sciences needs to be focused on the "how?" and "where?". The "how" of training in health sciences professions is rooted in a work-integrated learning (WIL) approach, given the nature of the professions, and is in line with the South African government and CHE's commitment to address "... positive graduate outcomes, global citizenship and community engagement..." (Council for Higher Education, 2011, p. 3). WIL is strongly rooted in the beliefs of one of the first educational theorists, John Dewey (1938), who held that "people learn by doing" (as cited in Council for Higher Education, 2011, p. 7), that a chosen profession is a calling grounded in the ethical identity of that profession, and that individual training for such a profession is already inextricably part of critical and scholarly involvement in societal issues linked to that specific profession. Involvement in workplace-based learning is thus part of training in the health professions. As an educational approach, WIL aims to enhance and optimise student learning by integrating theory with practice-based knowledge and experience (Council for Higher Education, 2011, p. 4), but can also benefit the workplace through student involvement. Types of WIL activities vary, depending on the type of WIL typology used in the design of the curriculum. Teaching and learning experiences associated with WIL are inclusive of classroom-based and workplace-based learning, with the characteristic of being "..... less didactic and more situated, participative, and 'real world' oriented" (Council for Higher Education, 2011, p. 4). Relevant to this study is the selection of teaching and learning activities for inclusion in the design of the curriculum. The CHE identified four typologies, "Work-directed theoretical learning", "Problem-based learning", "Project-based learning" and "Workplace-based learning" (Council for Higher Education,

2011, pp. 16-19). The candidate foresaw that a hybrid of these typologies could be used in designing teaching and learning activities, arguing from experience that none of the four typologies' activities would uniquely offer the learning experiences needed to achieve the envisaged outcomes. Relevant stakeholders (including experts and clinicians) would be invited during the design process to share their opinions on what teaching and learning activities should be included in the curriculum.

Curricular alignment in WIL strives for clarity in outcomes, alignment between outcomes, exit level, and teaching and learning activities, and clarity in terms of assessment and assessment activities, as well as guidelines and provision of feedback to students (Council for Higher Education, 2011, p. 13). The candidate had to ensure that alignment received the attention needed to ensure integration between theoretical knowledge and workplace application. Together with alignment, opportunities for interpretation and reflection on how knowledge is transferred to practice are highlighted as important 'mechanisms' that should be at the core of teaching and learning activities (Council for Higher Education, 2011, p. 15).

Given the nature of this qualification, it was foreseen that work-based learning would be included in the design process, as the curriculum would be used to train specialists working in the clinical field of OT-SI and the "where?" question of the four dimensions of Lee, Steketee, Rogers, and Moran (2013, pp. 69-71) would therefore also have relevance for this study. Any curriculum in health sciences has a "where?" component, as the practical training of students in the field of health sciences includes "real bodies", institutions where "real bodies" can be found and clinicians who are involved with them. Cultural norms, relevant protocols and procedures, and diverse contexts also become important and need to be addressed in curriculum development (Lee, Steketee, Rogers, & Moran, 2013, p. 71). The "where" is also closely linked to workplace-based learning, as such learning cannot take place without close consideration, consultation and coordination between the 'people' in the workplace. Although the curriculum designed in this research is on a postgraduate level, the 'external' factors are very relevant given the nature of this qualification. To become a master clinician in the field of sensory integration,

contact time in terms of assessment and intervention with children and their families and other individuals living with sensory integration challenges will be key. In the design process, the “outside” factors relevant to this curriculum will have to be carefully designed and embedded within the constructive alignment process.

DReq	Work-integrated activities need to be identified and integrated into curriculum.	(Council for Higher Education, 2011, p. 13)
DProp	There needs to be clarity in outcomes, alignment between outcomes, exit level, and teaching and learning activities.	(Council for Higher Education, 2011, p. 13)
DReq	Clarity in terms of assessment and assessment activities is essential.	(Council for Higher Education, 2011, p. 13)
DProp	Student feedback forms a core building block in work-integrated learning and needs to be provided for in the curriculum.	(Council for Higher Education, 2011, p. 13)
DReq	Curriculum outcomes in Health Sciences must also reflect the “where” in terms of the factors ‘outside’ of the curriculum.	(Lee, Steketee, Rogers, & Moran, 2013, pp. 69-71)

DProp = Design Proposition

DReq = Design Requirement

2.6.2. The Institutional and Statutory Curriculum Process

The CHE’s Higher Education Quality Committee (HEQC) is responsible for “quality promotion, institutional audit and programme accreditation” (Council on Higher Education, 2004, p. 1). They have published a “criteria for programme accreditation indicating the minimum standards for academic programmes”, to which programmes need to adhere when considered for accreditation. All higher education institutions have to use the criteria for self-evaluation when submitting programmes for accreditation. The criteria provide “the minimum standards for academic programmes” (Council on Higher Education, 2004, p. 1). They address programme design, student recruitment, admission and selection, staffing, teaching and learning strategy, student assessment policies and procedures, infrastructure and library resources, programme administrative services and postgraduate policies, regulations and procedures. Although the criteria are built into the process of new programme accreditation at the University of the Free State, to ensure adherence the candidate will have to consider them during the designing of the curriculum.

For the purpose of this review, a short overview of the institutional process of the University of the Free State and statutory processes involved in the approval of a new qualification is provided. As required by the CHE, a new qualification is subjected to two main processes in the course of seeking approval, the University of the Free State's institutional processes and the external processes.

The first step in the institutional process is the concept phase, where the need for a programme is identified and confirmed with the Head of Department, the Head of School and the Dean, whichever may be relevant. The programme coordinator consults with the Directorate for Institutional Planning and Research (DIRAP), and the design and development of the new qualification then receive attention. A new programme will need to include in its design the exit level outcomes, module outcomes, specific outcomes of each module and assessment criteria (Brüssow, n.d., p. 7). It is important to note that the curriculum that will be designed in this research process forms part of a PhD study and will thus deviate to a certain extent from the usual new learning programme application and approval process of the university (University of the Free State, 2017).

The need for this qualification has been established and has been approved by the relevant Head of Department and the Head of the School for Allied Health Professions. Approval at faculty level will be sought once the projected curriculum is available. As part of the institutional phase, DIRAP will be approached for consultation on the rationale of the qualification, its purpose, confirmation of the qualification type, programme outcomes, curriculum, and the teaching, learning and assessment strategy (University of the Free State, 2017, p. 3). This consultation will be sought once the planned curriculum is available and will thus not form part the actual research process. The rest of the approval and accreditation processes will also fall outside of this research, but will be described in short in order to present a holistic picture.

Once all the requirements of DIRAP have been met the curriculum will be submitted for approval by the Faculty of Health Sciences. Once approved by the Faculty Board, DIRAP

will handle the application in consultation with the Department of Occupational Therapy, ensuring that all institutional and external requirements are met. Once the curriculum has been finalised, DIRAP will submit the application for approval by the Academic Planning and Development Committee of Senate (APDC). The next step will be for the department to submit the curriculum to the relevant professional board of the HPCSA for endorsement. When this has been obtained, DIRAP will submit an application for Programme and Qualification Mix clearance to the Department of Higher Education and Training (DHET). If this approval is obtained, DIRAP will proceed with the online submission for accreditation to the CHE. The outcome of the application will be communicated to the institution. Only then can application for registration on the national database of the accredited programme be submitted to SAQA, who will finally assign a SAQA identification number. The rector of the university will receive confirmation of the accreditation (University of the Free State, 2017, pp. 3-5).

The APDC is responsible for one of the final steps of the approval of modules for inclusion in the institutional module catalogue, that of marketing. The marketing of the qualification can be undertaken once all processes have been completed and the qualification is activated on People Soft and included in the following year's Rule Book (University of the Free State, 2017, p. 5). Once all the relevant institutional and external processes have been completed the process of programme application and approval is concluded.

The next and last section in this chapter will look at the role and influence of educational design research in education and then more specifically in curriculum design.

DReq	Ensure that requirements of the institution and external accreditation processes are taken into consideration during the design process.	(Council on Higher Education, 2004, p. 1)
DReq	The rationale of the qualification, the purpose thereof, confirmation of the qualification type, programme outcomes, curriculum, and the teaching, learning and assessment strategy will be presented to DIRAP for review.	(University of the Free State, 2017, p. 3)
DReq	Include the exit level outcomes, module outcomes, specific outcomes of each module and assessment criteria.	(Brüssow, n.d., p. 7)

DProp = Design Proposition

DReq = Design Requirement

2.7 Educational Design Research and Curriculums

Educational design research is both an approach and a methodology, and is derived from the philosophy of pragmatism (Van den Akker, Gravemeijer, McKenney, & Nieveen, 2006, p. 29). As stated in Chapter 1 (cf. 1.7), this will inform the candidate's approach to answering the research question. This part of the literature review and perspective provides information on educational design research as an approach and its importance in education. The candidate will also argue for its importance in this research in order to place educational design research and its use into perspective.

2.7.1 Background to Educational Design Research and its role in curriculums

According to Reeves, McKenney and Harrington (2010, p. 790), educational design research had by 2010 already been in existence for nearly 20 years and "it has been labelled with many different terms" inclusive of "design-based research" "development research" and the now established "educational design research" (as referred to by van Laurel (2004) as cited in McKenney and Reeves (2012, p. 790). Design research as such is well established in the fields of engineering and information technology, and the "modifier 'educational'" was an attempt by educationalist to distinguish "design-based research" within the field of education (McKenney & Reeves, 2012, p. 790). Barab and Squire (2004, pp. 2,4) state that "design-based research" as used in education can be "traced back" to the work of Ann Brown and Alan Collins in the early 1990s. It is

characterised firstly by the methodical investigation of problems in real world educational settings in which a “product” is “designed” and secondly by the generation of theory. It “requires more than simply showing how a particular design works but asks the researcher to generate evidence-based claims about learning that address contemporary theoretical issues and further the theoretical knowledge of the field” (Barab & Squire, 2004, pp. 5,6).

The latest publication of McKenney and Reeves on “Conducting Educational Design Research” comes in three parts: (1) the “foundations” of educational design research, (2) the “core processes” involved in educational design research, and (3) how to “move forward” with educational design research. In the opinion of the candidate, this was the resource which gave her the most valuable information and guidance in her research in the field of educational design, as it not only gave a summary of where educational design research came from and its current status (acknowledging the role of all the foremost contributors to the field) but also helped her in a very practical manner to understand and implement her own educational design research.

McKenney and Reeves have developed a generic model for conducting educational design research (McKenney & Reeves, 2012, p. 77) which assists in the understanding of the process. The three “curriculum planning models” that guided them in their quest to develop a generic model were described by Marsh and Willis in 2007 and are briefly discussed by McKenney and Reeves (2012, p. 70). These three models were also relevant to this research and are therefore briefly reviewed here. They are the “rational-linear approach of Tyler”, the “naturalistic deliberative approach of Walker”, and the “artistic approach of Eisner”. The “rational-linear approach of Tyler” emphasises the importance of creating “useful learning experiences”, constructing these in a summative manner, and assessing and reviewing curriculums. The importance of Tyler’s work in the context of educational design research lies in the understanding of the journey of a curriculum, from entering to reaching “the desired, “terminal”” exit point (McKenney & Reeves, 2012, p. 71). Tyler thus identifies those end-point outcomes in observable behaviours which can be assessed. His work supports an outcomes-based approach

which is relevant for curriculum design in the South African context, as discussed in 2.4.2.1. Walker's focus on the importance of describing the development of a curriculum and including all the involved participants in this process has influenced educational design research, especially in terms of "negotiating shared understanding" while advancing in the "design of educational interventions" (McKenney & Reeves, 2012, p. 71). Including stakeholders in the development of a curriculum is thus recommended by Walker and will form an important component of the candidate's research plan. Eisner's "artistic" approach to curriculum planning includes "seven dimensions of curriculum", looking at the "context influence" for each of them and showing that each needs attention (as cited in McKenney & Reeves, 2012, p. 72). The seven dimensions are "goals and their priorities, content, types of learning opportunities, organization of learning opportunities, organization of content areas, mode of presentation and mode of response and types of evaluation" (McKenney & Reeves, 2012, p. 72). Reviewing the work of Eisner, the candidate saw how important it had been to him to think out of the ordinary and to create "artistically crafted work" inclusive of the design of a curriculum (Eisner, 2002, p. 4). He also (Eisner as cited in McKenney & Reeves, 2012, p. 72) accentuated the role of the "teacher" as the "curricular 'artist'" who knows best what should be included in the curriculum, and leaves the responsibility to this "curricular artist". McKenney and Reeves (2012, p. 72) also reinforce the importance of "a creative design research process".

The generic model developed by McKenney and Reeves (2012, p. 77) includes the three main phases involved in educational design research, of which two were used by the candidate in her quest to answer the question of "What would be an authoritative curriculum for a professional master's degree in sensory integration in the South African context?". Educational design research as a methodology will be discussed in detail in Chapter 4.

The literature review in this chapter on educational design research not only provided the candidate with insights into how educational design research has evolved and who the

current scholars are in this field but also gave her knowledge on the different stances, models and approaches she could use in this educational design research.

DProp	Identifying the end-point outcomes in observable behaviours that can be assessed.	(Tyler In McKenney & Reeves, 2012, p. 71).
DProp	Involve all stakeholders in the design of the curriculum.	(Walker In McKenney & Reeves, 2012, p. 71)
DProp	Describe the process of curriculum development.	(Walker In McKenney & Reeves, 2012, p. 71)
DProp	The influence of context on the different dimensions of a curriculum needs consideration in the design process.	(Eisner In McKenney & Reeves, 2012, p. 72)
DProp	Involve the “teachers” in the design process as “curricular artists”.	Eisner (In McKenney & Reeves, 2012, p. 72)
DProp	Bring creativity into play in the design process.	(McKenney & Reeves, 2012, pp. 77-81)

DProp = Design Proposition

DReq = Design Requirement

2.8 Concluding the literature review

From the literature on sensory integration, it was evident that not only has the importance of sensory integration in the developing child been well described, but disorders in which children experience recognized sensory processing difficulties causing barriers to learning, problems and challenges in their daily functioning are also well documented. The growing need for sensory integration over the individual lifespan was also touched upon, though the literature here is still lacking.

A case was made not only that the health system would benefit from the provision of services of occupational therapists with a professional degree in sensory integration on a community, primary and tertiary health care level, but that the education system would also benefit, as the long-term impact of sensory integration dysfunctions on the developing child has implications for their education. This case is further strengthened when the medium and long-term outcomes of the current health system priorities are calculated, showing that when preventative and promotive actions and services are available, the survival rate of children growing up in South Africa will rise. More children with special needs are going to rely on the South African health and education systems

for specialised services, including occupational therapists specialised in sensory integration.

In addition to sensory integration and professional demands, the literature review included a section on higher education and the relevance of the new HEQSF to this research. The literature on higher education underwrites and complements advances which this research will further explore and to which it will contribute in its design.

The role of the three professional bodies which could impact on the design of this curriculum, WFOT, HPCSA and ICEASI, were reviewed and discussed, as well as the institutional and statutory processes involved in the registration of a qualification.

Curriculum development as an educational field was briefly discussed with the aim of understanding its relevance and importance in this study. Curriculum development in health sciences was also reviewed and essential components, such as the dimensions of curriculums in health sciences and work-integrated learning, were addressed. Educational design research as an approach was briefly presented in so far as it has relevance for curriculum design.

Where relevant, theory that could have informed design requirements and design propositions was extracted and presented at the end of the relevant literature sections. The design requirements and propositions and their relevance will be further addressed in the discussion of the findings in Chapter 4.

In conclusion, the challenge faced in this study was to take a highly researched and specialised subfield of an established profession, in which the opportunity of a professional master's degree existed and where the expertise and guidance are provided by a first-world country, and to subsequently design a locally relevant curriculum, one which would address the needs of our society and of a profession faced with the realities of both first and third worlds, which would adhere not only to the standards set by higher

education but also to the international guidelines (ICEASI, 2016) for specialised professional training in the field of sensory integration.

CHAPTER 3: CONCEPTUAL OVERVIEW

3.1 Introduction

In this chapter, the candidate will give an overview of the philosophical foundations, methodological considerations and conceptual research plan which guided her in this project. The chapter will conclude with an overview of the educational research design process as it was relevant to the study.

3.2 Philosophical Foundations

The philosophical foundations of this study are presented in order to orientate the reader to the candidate's inherent ontological and axiological roots. These led her to select educational design research as a pragmatic method for generating knowledge while attempting to answer the research question (Ponterotto, 2005, pp. 127,128). According to Rolfe (nd, p. 21), the way we conduct research to gain knowledge depends on how we see the world and reality. The philosophical foundations of this study are presented here to familiarize the reader with the candidate's values, her ontological stance and her epistemological beliefs. This will be done by departing for the moment from the subject of this research.

At the centre of Figure 3.1, the subject under investigation, a curriculum for a professional Master's degree in Sensory Integration is represented (1). The idea of designing a curriculum in the specialised field of occupational therapy sprang from the candidate's valuation of research as a way in which practical, real-world knowledge could be discovered and/or confirmed, enabling greater access to the achievement of competence in occupational therapy practice (2). For this study, sensory integration therapy stands central to the specialised field of practice in occupational therapy. However, the candidate argued that for knowledge to be relevant it must be realistic, and executable in the context of real-world practice. Therefore, while axiology informed her decision to design a curriculum that would simultaneously promote OT-SI practice and enable greater access to this body of knowledge, her understanding of the ontological nature of realism made the contextual adherence and authenticity of the proposed curriculum an imperative (3).

For this reason, multiple stakeholders and the various contexts within which sensory integration is practiced in South Africa needed to be considered. Knowledge had to be created by pragmatic means; drawing upon a spectrum of research methods and cyclical iterations of design and construction. An epistemology of pragmatism was therefore followed (4). Educational design research was selected as the methodology of the study (5), as this approach naturally emerges from pragmatism, is iterative and supports the use of multiple methods to create 'artefacts' or products. It was envisioned that by applying educational design research two products would emerge: a) a curriculum for a professional Master's degree in sensory integration, and b) the design knowledge (theoretical understandings) needed for the creation of a curriculum for a professional degree in occupational therapy, in the form of design requirements and design propositions (6). The second of these would feed back into the ontological search for realistic knowledge that would be context-appropriate (7), while the first - the curriculum - would address the axiological values of access and enablement (8).

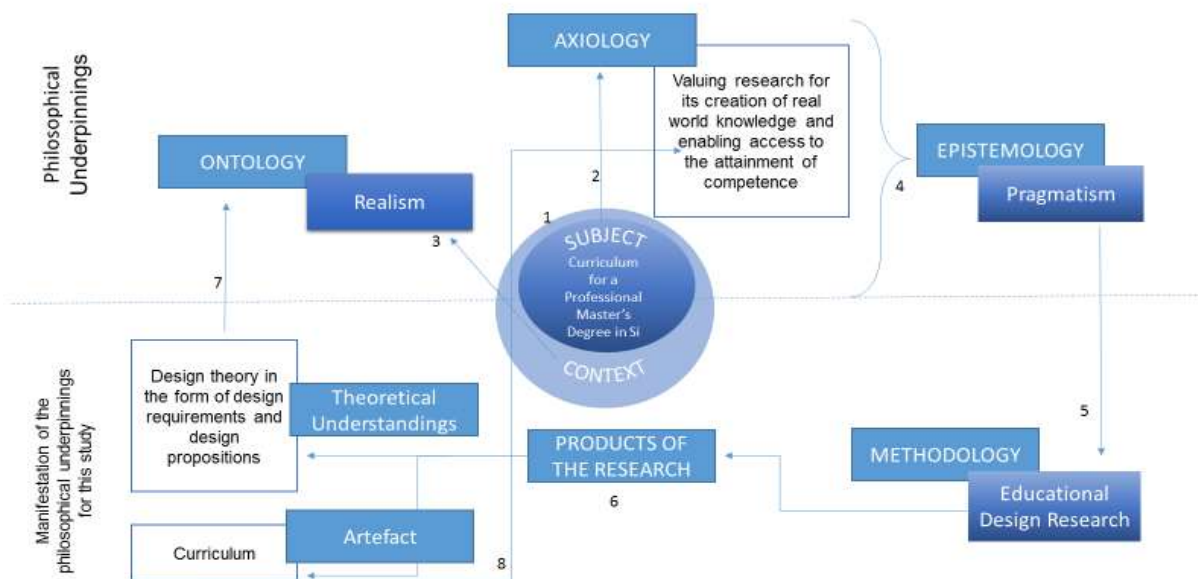


Figure 3.1: The philosophical and methodological underpinnings of the study

The relevant philosophical underpinnings and methodological considerations of Figure 3.1 will be further elucidated below.

3.2.1 The subject and product of the research

The subject of this research was to generate a realistic understanding of what would comprise an ideal professional master's degree for occupational therapists in the field of sensory integration, delivering services appropriate to the reality of the South African context. The first product, the curriculum at a professional master's degree level for occupational therapists in the field of sensory integration, speaks to the axiological values of access to specialised training and through this enabling specialised services that are contextualised and that feed back to the ontological search for what would be the best curriculum. The design requirements and design propositions generate theoretical understandings, serving as the second product emerging from this study. Knowledge is thus created through the research, which in turn feeds into the axiological search for contextually realistic knowledge.

3.2.2 Axiology

Research has value and meaning for the candidate because it allowed her to generate a realistic understanding of the curriculum and to deliver an end product that would enable the contextualised practise of sensory integration in the real world, offer access to the body of sensory integration knowledge, and create a comprehensive 'eco-system' in which sensory integration training and service delivery could flourish.

3.2.2 Ontology

The candidate's ontological worldview is that of realism (Guba & Lincoln, 1994, p. 110). This holds that "the world and everything in it exists 'out there' independently of our experience" (Rolfe, nd, p. 21). The candidate asked the questions, what is real, what can we do, and what do we want within the limits of what is possible? In this study, she set out to discover what was needed to create the best curriculum, one that would answer to a training need and through this impact on sensory integration service delivery in the South African context.

3.2.4 *Epistemology*

“What would be an international acknowledged curriculum within the prescribed guidelines of the Council on Higher Education (CHE) for postgraduate sensory integration training in a developing country that will allow students to exit with identified knowledge, skills, and attitudes on sensory integration theory, assessment, intervention, and research that will be on a professional master clinician level?” This was the research question, and it was asked because no such curriculum currently exists in South Africa. The “What” that introduced the question implied that something was unknown, in this case the curriculum. This meant that a curriculum had to be developed and designed from a clean slate.

The word “What” in the research question implies action in the context of pragmatism, As Goldkuhl maintains, “Action is the way to change existence” (2004, p. 1). In pragmatism, action is intertwined with knowledge. Already in the 1930s, Dewey (as cited in Goldkuhl, 2004, p. 1) wrote that human knowing and action are intertwined in the context of pragmatism, meaning that both need to be taken into account in the research process. This had relevance for the candidate, since in answering the “What” question she designed and constructed (“action”) a curriculum, but knowledge was also created about the design process and what was important in the design of a professional master’s degree in the field of occupational therapy. In creating knowledge during this research, she adhered to Dewey’s quest for “moral responsibility in presenting knowledge that has consequences for future application”, since the knowledge created in terms of the design requirements and design propositions was recorded for future use (as cited in Goldkuhl, 2004, p. 8). The social relevance of research is central to the pragmatic view. It should address ‘real world problems’ and seek the best possible applications or solutions (Creswell, 2014, pp. 10,11). The ‘real world problem’ in this research was the need for an occupational therapy master’s degree in sensory integration, as no such qualification was available in South Africa at the time of the planned study. In her quest to find a solution to this problem, the candidate recognised that the curriculum would need to be designed in a very specific historical and social reality comprising different contexts (the academic

context, the service context and the curriculum user context). These needed to be investigated in order to arrive at the best answer (Creswell, 2014, p. 11).

The reality of limited availability of theory on how to develop and design a curriculum for a professional master's degree for occupational therapy in the field of sensory integration, other than general guidelines laid down by the South African Qualifications Authority (SAQA) and the CHE, raised the candidate's awareness to an existing knowledge gap. In identifying this knowledge gap, the candidate acknowledges that professional master's degree is a relatively new qualification, only announced by the Minister of Education in August 2013 (Council on Higher Education, SA, 2013, p. 1). The candidate was introduced to educational design research by Prof Sarah Howie (2013) and started to explore the possibilities that this research approach offered, namely to 'design with the aim of solving a complex research question' in education and simultaneously to produce knowledge on the "How". The candidate was confident that the research question could be answered using an educational design research. In the words of Gorges Frascara, "If one wishes to find the best possible response to a design problem, and if one aspires to enrich the collective reservoir of the profession", educational design research will provide a method that is "more than taking an off-the-shelf, readymade structure" and will offer the challenge to "depart from existing knowledge, conscious that every design situation benefits from new knowledge" (Frascara & Winkler, 2008, p. 11).

From the viewpoint of pragmatism, both singular and multiple realities are acceptable (Creswell & Plano Clark, 2011, p. 41). For this research, however, multiple realities needed to be calculated in order to create the prototype of a curriculum ready for implementation (Creswell & Plano Clark, 2011, p. 42). In designing a curriculum, the candidate thus took the view that there was more than one social reality that needed consideration. Firstly, understanding of the 'academic' requirements in the design was fundamental. Secondly, the understanding of the realities and needs that exist in society regarding the relevant service and how these would impact on the content of the curriculum had to be calculated. Thirdly it was necessary to obtain the relevant stakeholders' opinions on what would comprise 'the best' curriculum. A mix of methods,

using a diversity of data was thus needed to answer the research question, and pragmatic knowledge claims were therefore relevant (Creswell, 2014, p. 17). Educational design research employs different methods to obtain data, depending on the nature of the research question and which method/s would give the best answer/s. Mixed methods are regularly used in educational design research (McKenney & Reeves, 2013, p. 9). Most of the methods used during this research were qualitative in nature, and will be described in detail in Chapter 4.

While limited use was made of measuring variables to generate knowledge (Creswell & Plano Clark, 2011, p. 40), it was part of a mix of methods used to generate data, as noted in the previous paragraph. There were quantitative variables that needed to be investigated. This was done using a questionnaire in which the variables were numerically measured, with as many participants who could provide the best answers as possible. Quantitative methods are very different in terms of the ontological and epistemological assumptions that underpin them, but both methods were needed to arrive at “what works” best (Creswell & Plano Clark, 2011, p. 41). The use of both quantitative and qualitative methods is acknowledged in a pragmatic approach (Creswell, 2014, p. 11). However, qualitative methods prevailed in this research, as the candidate believed that many individuals had ‘a story to tell’. They ranged from international experts from first-world countries to clinicians delivering services in deprived and ill-resourced South African environments. Taken together, they could contribute to the design of an internationally acknowledged professional master’s curriculum for specialised sensory integration training relevant for the South African context. The candidate subjected the curriculum to several stakeholders in the design process to obtain their views and opinions (Guba & Lincoln, 1994, p. 110). She believed that more than one reality needed to be “heard” and understood (Fouché & Schurink, 2011, p. 309) before she could arrive at the best possible intended curriculum. The “truth” of what would be the best curriculum was “out there”, but in designing and constructing it all the stakeholders’ “worlds” needed to be understood (Fouché & Schurink, 2011, p. 309).

Figure 3.3 shows the initial plan of the educational design research process that was projected for the design of the curriculum. Educational design research consists of three phases: an analysis and exploration phase, a construction and design phase, and an evaluation and reflection phase. These phases will be discussed in 3.6.

The candidate valued the practical approach that pragmatism offered for finding the best solution to the problem (Cameron, 2011, p. 101). Many different views/stances from multiple sources were considered in order to arrive at the best answer (Creswell & Plano Clark, 2011, p. 42; Sloane, 2006, p. 25; Barab & Squire, 2004, p. 5). Pragmatism acknowledges the need for an iterative, cyclical approach (Cameron, 2011, p. 105). The candidate appreciated this, adopting her own iterative, cyclical process to arrive at the intended curriculum.

In the next section, the candidate will elucidate in detail the considerations relating to educational design research as they were relevant to this study and its contributions to the methodological process.

3.3 Methodological Considerations

Given that educational design research is a relatively 'new' method, the candidate deemed it necessary to furnish the reader with the necessary background.

3.3.1 Background to Educational Design Research

In understanding the 'position' of educational design research in the research world it will be helpful to review an argument which has been ongoing for more than a 100 years. This is the question of how to "define the most appropriate relationship between a quest for fundamental understanding and the quest for applied use" (McKenney & Reeves, 2012, p. 8). Offering an insight into this relationship, Stokes (as cited in McKenney & Reeves, 2012, pp. 8,9) in 1997 produced a "matrix view of scientific research". He named this "Pasteur's Quadrant" and included "a space" for research to be "plotted". Pasteur's Quadrant is shown in Figure 3.2.

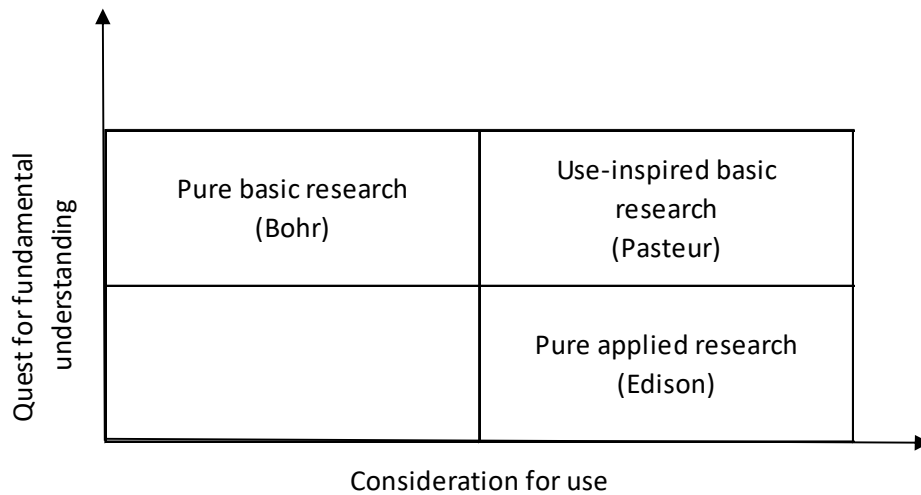


Figure 3.2: Pasteur’s Quadrant

(Source: Stokes in McKenney and Reeves, 2012, p. 8)

On the Y-axis of the matrix, the “quest for fundamental understanding” is plotted, while the X-axis plots “considerations for use” (McKenney & Reeves, 2012, p. 9). In the top left quadrant, Stokes placed “pure basic research”, using the research of Niels Bohr as a “typical” example for this quadrant. In the top right-hand quadrant, he placed “use-inspired basic research” and quoted Pasteur’s research as a typical example of this. In the lower right-hand lower corner, he placed “pure applied research”, and singled out Edison’s research as a typical example of this. The lower left-hand quadrant was left empty to signify research that “neither seeks fundamental understanding nor practical use” (McKenney & Reeves, 2012, p. 9). According to McKenney and Reeves, the educational design researchers, Roschelle, Bakia, Toyama and Patton, in 2011 “characterised their work as belonging to Pasteur’s quadrant” (as cited in McKinney and Reeves 2012, p. 10). Pasteur created knowledge by searching for answers in real world situations, which is exactly what educational design research is about. In the same spirit, the candidate went out ‘into the real world’ to hear and record experts’ and stakeholders’ views and opinions on what would be the best curriculum (Fouché & Schurink, 2011, p. 309).

The different models of educational design research described in the literature have two features in common: they are iterative, with multiple cycles. They include an analysis and

exploration phase (also referred to as an initial phase, preliminary phase, a needs and context analysis phase, an exploration phase, or a problem analysis phase). The analysis and exploration phase is followed by a design and construction phase (also referred to as the intervention phase, the prototyping phase or the solution development phase). The third and last phase is the evaluation and reflection phase (also referred to as the assessment phase or evaluation phase) (Plomp, 2013, pp. 18,19; McKenney & Reeves, 2012, p. 74). For this study, the candidate adopted the terminology of McKenney and Reeves, referring to the first phase as the analysis and exploration phase, the second as the design and construction phase, and the third as the evaluation and reflection phase.

The process of educational design research will now be discussed in more detail, providing background on how it was approached, executed and reported on.

3.3.2 The Educational Design Research Process

Design research has been described as “a ‘family’ of related research approaches with internal variations in aims and characteristics” (Van den Akker, Gravemeijer, McKenney, & Nieveen, 2006, p. 4). The methods used are seen as tools for creating and changing human artifacts. In this study, the artifact was the curriculum. Methods for collecting data are chosen to address the specific problem and/or situation. Qualitative and quantitative methods are employed and can include, for example, combinations of explanatory, interpretive, experimental, or exploratory methods (Van den Akker, Gravemeijer, McKenney, & Nieveen, 2006, p. 44).

According to Howie (2016), educational design research is “the systematic study of analysing, designing, developing and evaluating educational interventions as solutions for problems for which no ‘how-to-do’ guidelines exists. Its two aims are to design “optimal interventions” for a real world-problem and to create knowledge (“theories”) for future use “on ‘how’ and ‘why’ these interventions work” (Howie, 2016). For this study, it was important not only to design the curriculum but also to describe how theory, data, and creativity came together in the design process and were translated into knowledge. This

knowledge not only informed the design of the curriculum but could also influence the designs of future curriculums in occupational therapy.

Relevant literature, empirical findings of the research process, together with the "...craft wisdom, inspiration and experience..." of the researcher can assist in the design of an intervention, in this case a curriculum (McKenney & Reeves, 2012, p. 39). The 'knowledge' created in educational design research culminates in design requirements and design propositions, referred to by McKenney and Reeves as "theoretical understandings" (2012, p. 39). "Produced" during the research process, these theoretical understandings are the "output" of educational design research (McKenney & Reeves, 2012, p. 39). The process of generating theoretical insights that could culminate in theoretical understandings already began with the review of the literature (cf. Chapter 2).

To clarify the differences between design requirements and design propositions, both will briefly be discussed. Design requirements (originating from engineering design) are the "operational criteria" that must be met in the design process. They supply the "freedoms and constraints" or "boundaries" for a design, but can also address "opportunities" (McKenney & Reeves, 2012, p. 106). The design requirements needed to be aligned with the long-term goal of the curriculum and to address key issues of its design. On the other hand, design propositions (originating from organisation science) refer to "core ideas" which support the design. Denyer, Tranfield and van Aken, working in the field of organisation studies, maintain that design propositions should offer information on "what to do, in which situations, to produce what effect and offer some understanding of why this happens" (2008, p. 396). In the initial stages of the research process, "partial design requirements" are formulated. As the process evolves, the literature (as presented at the end of the relevant sections in Chapter 2), the data and the design process itself will contribute to finalising the design requirements (McKenney & Reeves, 2012, pp. 106, 107). In educational design research, design propositions are usually changed and adapted, allowing for a deepened and advanced understanding of the needs, realities and contexts for which a solution is being designed. For this reason, the term "initial design propositions" will be used until the final propositions have been achieved

(McKenney & Reeves, 2012, p. 107). The initial design propositions will emerge from the literature review, from the empirical data obtained during the design research process, as well as from the creativity of the designer (in this case the candidate). The design propositions will provide direction during the design process on how to achieve the long-term goal (McKenney & Reeves, 2012, p. 112), that is, the intended curriculum.

The educational design research process commences with a phase of analysis and exploration in which the problem is explored, relevancy is established and consistency determined, depending on the “artefact” (product) which needs to be designed (McKenney & Reeves, 2012, pp. 78, 79). In the second phase, that of design and construction, the practicality of the product and its expected effectiveness are developed. In the third phase of evaluation and reflection, actual effectiveness is established (cf. Fig 3.3). Each of these phases involves “flexible” and “iterative” processes, and also, according to the model of McKenney and Reeves, 2012 (pp. 77,78), includes micro- and meso-cycles. While the three phases are relevant to educational design research in general, only the first two will form part of this study (cf. 4.4).

During the first phase of analysis and exploration, the extant literature is reviewed in order to gain a comprehensive understanding of the problem at a theoretical level (McKenney & Reeves, 2012, p. 79), to clarify “long-range goals”, and to identify “partial design requirements” (McKenney & Reeves, 2012, p. 106). This phase also includes identifying the “initial design propositions based on contextual insights” (McKenney & Reeves, 2012, p. 79). Any coherent set of activities which informs or produces a “draft, partial, or final form” of a product is seen as a micro-cycle (McKenney & Reeves, 2012, p. 78). Relevant methods of data generation or collection are implemented to obtain the necessary data, to produce “a descriptive and analytical understanding” of the problem, as McKenney and Reeves describe it (2012, p. 79), or, where relevant, to design a draft version of a possible solution, which in the case of this research would be a first prototype of a curriculum. The actions which culminate in a prototype are collectively seen as a “meso-cycle” (McKenney & Reeves, 2012, p. 78). Depending on the nature of the research process and the product

being designed, one or more micro-cycles may generate meso-cycles. The entire design process is seen as a macro-cycle (cf. Figure 3.3).

The second phase is that of “design and construction”. McKenney and Reeves (2012, p. 79) describe this as “a deliberate-generative phase” in which there is an “interaction between conceptualisation and creation”. Here the researcher needs to consider all the knowledge available in order to “design” and “construct” “versions” or “prototypes” of a possible solution. This phase can include various micro-cycles, culminating in one or two meso-cycles (McKenney & Reeves, 2012, p. 79). Each meso-cycle can involve micro-cycles of “design and construction”, an infusion of literature, or where necessary another phase of “analysis and exploration”. This is an iterative process in which “potential solutions to the problem are generated, explored, considered and mapped” (McKenney & Reeves, 2012, p. 79). The essence of the ideas that are fundamental to the design are described and shared with experts, possible users and other relevant stakeholders whose opinions could contribute to the refinement of the prototype ‘under construction’. In the “design phase”, ideas are generated that can contribute to the prototype. “Design ideas” can include design “requirements, propositions, skeleton design” and “detailed specifications” (McKenney & Reeves, 2012, p. 125). The function of this iterative process is to collect empirical evidence about both the practical and theoretical effectiveness of the intended curriculum, and to continue building knowledge on the design requirements and design principles emerging from the research. According to Van den Akker, Gravemeijer, McKenney, and Nieveen (2006, p. 158) “the challenge for design research is to capture and make explicit the implicit decisions associated with a design process, and to transform them into generalizable theories”. Identifying, extracting, capturing and describing a relevant ‘theory’ that would contribute to the knowledge domain of designing or developing professional master’s qualifications in occupational therapy offered a novel challenge the candidate set out to address.

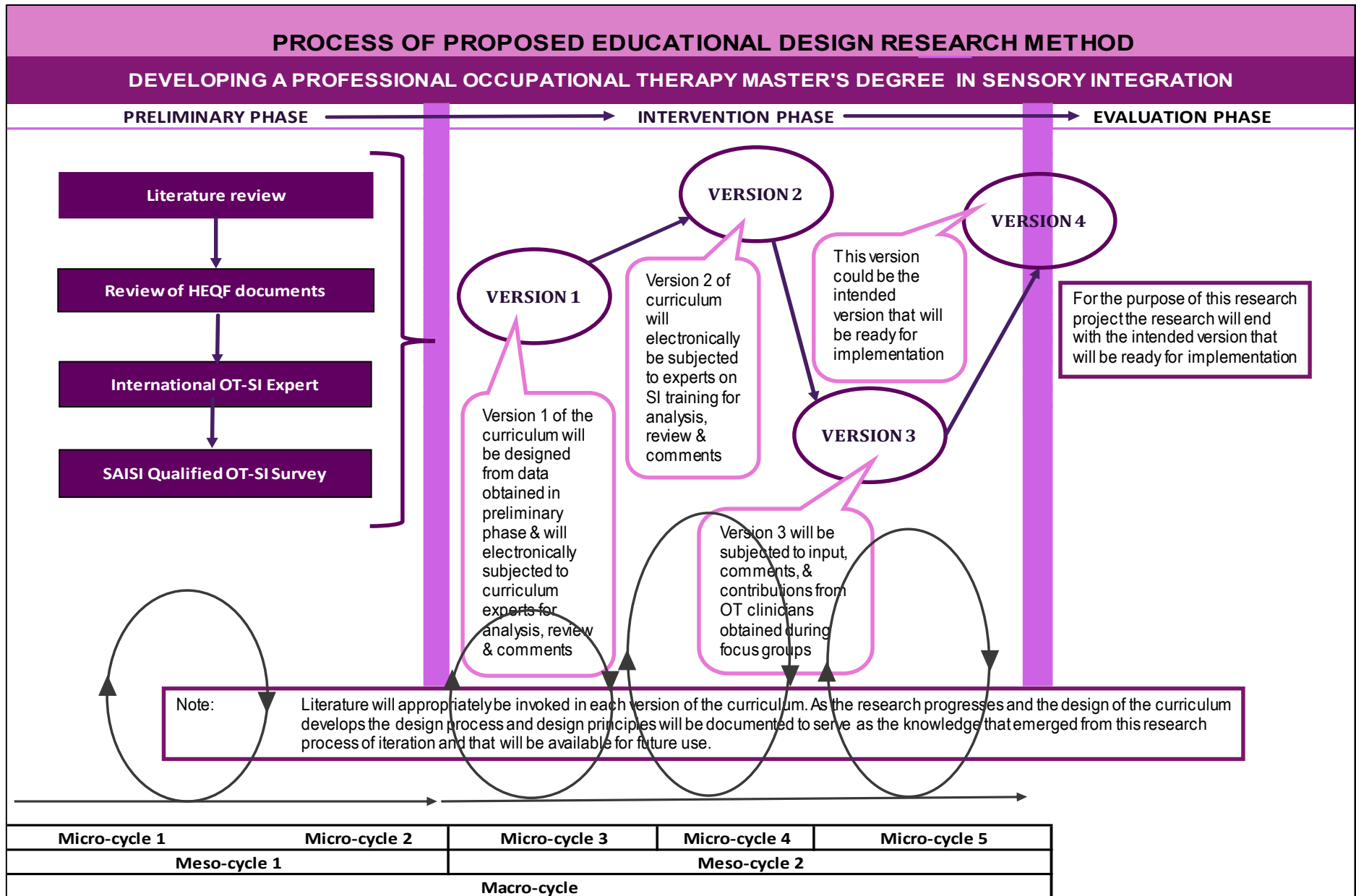


Figure 3.3: Proposed process of the research

When the second phase of the educational design research process has been concluded, the candidate will be able to present a final intended curriculum for a professional master's degree in sensory integration that would be ready for submission and approval by the relevant institutional and statutory bodies for possible implementation. For the purpose of this research the intended curriculum will be the final product. For further elucidation, refer to 4.4, "Delimitations of the research".

To give a holistic overview of the educational design research process the last and final phase of the research process will be briefly reviewed.

The final phase of the educational design process is an "evaluation phase". According to McKenney and Reeves (2012, p. 79), it consists of "one (empirical) micro-cycle" of "evaluation and reflection". The final evaluation of the "product" is done in this phase and, depending on the type of intervention and its specific goals, the "soundness, feasibility, local viability...effectiveness, and/or long-term impact" could be studied (McKenney & Reeves, 2012, p. 80). In the case of the 'intervention' in this study, it could be the evaluation of the implemented and attained curriculum once it has been approved and offered as a qualification. These however are processes that will only take place once the curriculum has been implemented and thus fall outside the limits of this research.

It is important to note that the designed "curricular products" (which are the "artefacts") and the knowledge generated for future use through the development of "the design principles" (in the case of this study referred to as design requirements and design propositions) are not the only outcomes of the educational design research process. A third outcome of educational design research is discussed by (Plomp & Nieveen, 2013, p. 15; McKenney & Reeves, 2012, p. 75; Van den Akker, Gravemeijer, McKenney & Nieveen, 2006, p. 118). This is the "professional development of the participants involved" during the research process. Academics and clinicians will be involved in this study, and the possibility of professional development will be reflected on during the discussion of the findings in Chapter 4.

In conclusion of this section, the choice of the research method was appropriate, as there are currently no guidelines or other contextually relevant sensory integration curriculums that could be used for development, or against which a new curriculum could be benchmarked. The candidate believes that this research could be a prototype for further studies on educational design research and curriculum development within the profession of occupational therapy.

3.4 The aim of the research

The aim of this research was to design a curriculum, relevant in the South African context but internationally acknowledged, for a professional occupational therapy master's degree in sensory integration (M OT (SI)), to meet the needs of individuals and their families who struggle with sensory integration difficulties and dysfunctions.

3.5 Research objectives

The overarching objectives formulated in fulfilling the aim of this research were:

Objective 1: To obtain contextual knowledge of relevant requirements and guidelines in Higher Education (HE) (inclusive of curriculum development) and relevant professional organisations that would contribute to the design requirements and design propositions, directing and providing educational 'boundaries' in the curriculum design process.

Objective 2: To identify the conceptual knowledge, skills and attitudes, as well as learning experiences to be included in the design of the curriculum of a professional master's degree in sensory integration that would allow clinicians to attain competencies needed to deliver specialised OT-SI services.

Objective 3: To obtain contextual knowledge of the realities of delivering sensory integration services in South Africa and ensure that the necessary competencies

for delivering specialist OT-SI services relevant to the South African context are included in the curriculum.

Objective 4: To engage in the progressive phases of the educational design process, iteratively evolving prototypes of a curriculum for a professional master's degree in sensory integration which will ultimately culminate in a final version ready to be submitted to the institutional and statutory approval processes.

Objective 5: To carefully document the design process, together with design requirements and design propositions emerging during the research process, generating knowledge for future use.

Each phase of the educational design research process included micro-cycles of activities, each with its own aim and phase objectives. These supported the overarching aim and objectives stated above, culminating in the final intended prototype of the curriculum. The aims, objectives and activities of the micro-cycles will be presented in Chapter 4.

3.6 Phases of the education design research process as were relevant for this study

Each of the phases in the educational design research process had a unique purpose and will therefore be discussed separately. Figure 3.3 gives the graphic plan of the research as it was conceptualised at the start of the process. Reference will be made to the conceptual process as it continually guided the candidate in carrying out this study. To orient the reader, activities which formed part of the research process will be briefly referred to in the following sections. The details of the methodology as it was applied will be provided and discussed in detail in Chapter 4.

3.6.1 Analysis and Exploration Phase

In this first phase of the research, it was important to analyse and explore literature that could provide answers on curriculum design and the relevant requirements and guidelines

laid down by the CHE. Consistency had to be obtained in terms of a logical and cohesive structure for the design of the master's curriculum in sensory integration. The candidate relied extensively on engaging with literature to identify, summarise, and synthesise what was available and relevant, and to create a supportive textual foundation (Trafford & Lesham, 2008, p. 75), especially for the design of the first prototype of the curriculum.

The textual information was used to compile a first prototype. This consisted of an outline of the curriculum, including its core curricular components, such as exit level outcomes, modules and their respective learning outcomes, and assessment strategies, as well as teaching and learning experiences that would help in designing a coherent learning programme culminating in a professional master's degree (NQF level 9) in the field of sensory integration. The review of the literature also provided the candidate in particular with partial design requirements and initial design propositions, to be discussed as part of the findings in Chapter 4.

The textual foundation was also used to compile a set of predetermined semi-structured questions. These were designed to collect qualitative data from international experts in the field of sensory integration. The function of this data generation was to determine their views on the core competencies needed, as well as what, according to international experts, constituted a master clinician in the field of sensory integration. The researcher believed that international experts had a 'subjective voice' (Maree & Van der Westhuizen, 2010, p. 32) which could add value and credibility to the envisaged training curriculum. Data were collected through qualitative semi-structured e-mail interviews in which the experts offered their personal views and opinions on the core competencies in terms of knowledge, skills and attitudes of a master clinician in sensory integration that would need to be included in the curriculum. The data were further used in the generation of subsequent data (Creswell & Plano Clark, 2011, p. 42). The international experts' views, together with the literature review, were used to construct the first prototype of the intended curriculum and concluded the analysis and exploration phase of the research.

3.6.2 Design and construction phase

The design and construction phase (the second phase) of the research process began with the design of the first skeleton prototype of the curriculum. This phase was characterised by a rigorous and iterative process of data generation, data analysis and design (Plomp, 2013, p. 19; McKenney & Reeves, 2012, p. 13; Van den Akker, Gravemeijer, McKenney, & Nieveen, 2006, p. 4) arriving at the final intended prototype of the intended curriculum, ready for submission to the institutional and statutory approval processes before being implemented. The function of this iterative process of micro-cycles of data generation/collection was to collect empirical evidence about both the practicality and theoretical effectiveness of the curriculum, and to continue building knowledge on the design requirements and design propositions which emerged from the research. This was done through systematic documentation, analysis and reflection on the entire design process (Van den Akker, 2010, p. 188). The systematic documentation of the entire design process informed the second goal of the research, that of developing knowledge in the form of theoretical understandings for possible future use.

It was also in this phase that stakeholders became actively engaged and contributed to the curriculum. Here a strand of quantitative research methods was used. The main purpose of this quantitative survey was to obtain numeric data (Creswell, 2009, p. 12) on the contribution of current South African Institute for Sensory Integration (SAISI) courses to clinicians' competencies, to their opinions on their experiences, their levels of satisfaction, the need for further possible qualifications, as well as any additional needs they could identify in terms of competencies. The quantitative data of a large number of participants added value and credibility to the findings, supporting the decision-making process in the construction of the curriculum. These data were obtained using an electronic questionnaire (Creswell & Plano Clark, 2011, p. 45).

During the construction and design phase, four prototypes of the curriculum evolved as the design process proceeded. The curriculum was adapted, added to and refined according to the results and findings obtained. The curriculum and process of development were designed within the ambit of national higher education policy, and the

minimum requirements for higher education in South Africa. The candidate consistently aspired to meet the criteria and standards set by the Higher Education Qualifications Sub-Framework (HEQSF) of the CHE (Council for Higher Education, SA, 2013), to ensure comparability and maintain the quality of the curriculum. This phase concluded when the candidate was satisfied that the research question, “What would be an international acknowledged curriculum for postgraduate sensory integration training in a developing country that will allow students to exit with identified competencies of knowledge, skills, and attitudes on sensory integration theory, assessment, intervention, and research that will be on a professional master clinician level?” had been answered.

As noted above, the third phase of evaluation and reflection did not form part of this research. However, it is again presented here in brief as part of the methodological considerations in order to give the reader a holistic picture of the educational design research method. It is important to note that, in the South African context, the designed curriculum would at this stage have to go through the institutional and statutory processes as discussed in 2.6.2, for institutional approval, professional board endorsement, accreditation by the CHE, and finally inclusion and activation at institutional level as a qualification.

3.6.3 Evaluation and reflection phase

In this phase, the design is typically “tested” and “reflected” on (McKenney & Reeves, 2012, pp. 79,80; Plomp, 2013, pp. 19,30). In the case of a curriculum, it is usually implemented, and users’ interpretations of the curriculum as delivered in teaching environments are obtained by exploring the learning experiences of students from their perspectives as well as those of the implementers (lecturers) (Plomp, 2013, pp. 29,30). The intention is that the evaluation of the curriculum will be rolled out after it has been implemented. For evaluation purposes, it will be important to obtain the views and opinions of both the users and the implementers on the actual practicalities of the curriculum and its effectiveness (Plomp, 2013, p. 30).

3.7 Conclusion

Chapter 3 laid out the philosophical foundations and methodological considerations as they applied to this research. A summary of the educational design research process gave a bird's eye view of what could be expected in the next chapter. The details of the research methodology followed during the research will be given in Chapter 4. The chapter will start by presenting general methodological considerations (ethical considerations and delimitations of the study) and will then follow with a description and discussion of each iterative cycle of the research process. Because of the nature and complexity of educational design research and in the interest of maintaining coherence, the candidate chose to present the methodology and findings of each micro-cycle as a unit in one chapter.

CHAPTER 4: PRESENTATION AND DISCUSSIONS ON METHODS, ACTIVITIES AND FINDINGS

4.1 *Introduction*

In-depth thought and reasoning were needed in deciding on possible ways of dividing into chapters the presentation and discussion of the methods, activities and findings of the educational design research process applied in this study. The candidate finally decided to present the total research process and the related discussions in one chapter. She realised that it would be an exceptionally long chapter, but nevertheless argued that educational design research is an integrated, interwoven process, where the findings of the first micro-cycle would impact on the last micro-cycle. The methods used in the analysis and exploration phase would also be used in the design and construction phase. With each part of the process intertwined with the final part of the research, the candidate therefore decided to present the whole process in one chapter. To maintain coherence, she aimed for consistency in the presentation and discussion. She believed that consistency, together with the graphic representation of the actual process of educational design research as shown in 4.5 (cf. Figure 4.1), would help the reader to follow the process.

As described in Chapters 1 and 3, an educational design research methodology was used to design a curriculum for a contextually relevant professional master's degree in sensory integration, one that would be internationally acknowledged and would allow occupational therapy master students to exit with advanced, specialised competencies relevant to sensory integration service delivery, as well as research skills which would contribute to the current body of sensory integration knowledge and research. At the outset of this chapter, the positioning of the curriculum as well as its boundaries will be defined, as this will assist in preparing the reader in terms of what is to be expected.

The positioning and boundaries were already established in the analysis and exploration phase and were further crystallised during the design process. They will be discussed in

detail as the results unfold. However, to aid orientation they are briefly reviewed here in terms of their level, what they include, and what is meant by 'intended curriculum'.

The design of the curriculum includes the "what" of a curriculum. Specific components were identified in the analysis and exploration phase of the research (and will be discussed in 4.5.1.4). These served as boundaries in terms of the "what" of the curriculum as it was designed. Components included in the curriculum are:

- The purpose, aim and outcomes of the curriculum.
- General information on prerequisites, delivery mode, fundamental features, assessment, and progression, where relevant.
- Modules and their themes.
- Module outcomes, with the respective specific module outcomes.
- Teaching and learning activities, including the relevant assessments.

An 'intended curriculum' is one which, while ready to be implemented, will first have to be submitted to the relevant institutional and statutory processes for approval and accreditation (South African Qualifications Authority, 2013) before it can be delivered.

In arriving at the final prototype of the curriculum, the candidate used various data sources and sampling methods. Different methods of data generation and collection were implemented, and strategies for analysis were applied as expected in an educational design research process (Plomp, 2013, p. 19; McKenney & Reeves, 2013, pp. 74, 75; Van den Akker, Gravemeijer, McKenney, & Nieveen, 2006, p. 44). Each micro-cycle of data analysis will be presented as a unit in the relevant phases. There were, however, methodological working methods applied to all those micro-cycles in which qualitative research methods were used to generate data, and these were of relevance throughout. The methods of data generation that applied to most of the micro-cycles will be presented first, together with the ethical considerations and delimitations of the study. The single quantitative data collection method will be discussed separately in the section where it was implemented (cf. 4.5.1.2).

4.2 General methodological working methods

During the research, methodological considerations were applied to most of the qualitative activities used. These will be presented once-off so as to avoid repetition. Any exceptions will be discussed under the relevant research activity.

4.2.1 Data sources

Throughout the research process, recommendations relating to the number of participants in research designs were considered, as discussed by Hesse-Biber (2010, pp. 52, 54). This ensured that the type of generalizations made were warranted. The details of the data sources of each micro-cycle will be given under the relevant cycle.

4.2.2 Data generation

A mix of data-generation methods was used in this research. An educational design research process is innovative and responsive, so relevant data-generating methods were identified and used as the research proceeded (Kelly, 2006) and as determined by the objective of each specific activity (Greeff, 2011, p. 341). The methods included semi-structured e-mail interviews, a Skype interview, and two focus groups in which the opinions of curriculum experts and international experts were obtained, before the research process was concluded with the final intended curriculum. Each data generation activity will be described under the relevant micro-cycle.

4.2.3 Data management

Data obtained through e-mail interviews were copied from the e-mails and pasted into Word format documents to ensure confidentiality and analyses purposes (Lokman, 2006, p. 1289). Each participant received a coded number, and all possible identifiers were removed from the texts. The participants remained known to the candidate only. E-mails were deleted and trashed after being converted to Word format documents. Printing of responses was done after the text had been de-identified and converted into Word format

(Lokman, 2006, p. 1289). The Word documents were saved on a password-protected computer to which only the candidate had access and on an external drive that was kept in a secure private cabinet. The information was stored in two locations to minimise the risk of data loss. The co-coder in this research was sent copies of transcriptions by e-mail which she printed in hard copies and filed. The e-mails were deleted and the file was kept in a locked cabinet in her office.

The Skype interview and focus groups were recorded with digital voice recorders and immediately transferred to the same password-protected computer and secured external drive. Two voice recorders were used to obtain data for each of the voice data generation activities. This ensured that a backup was always available should technical errors occur. Recordings of the Skype interview and the two focus groups were deleted immediately after the transfer had been completed. The voice recording of the Skype meeting was transcribed by an independent transcriber and the recording was deleted once the transcription had been completed. Voice recordings of the two focus groups were e-mailed to a professional company that did transcriptions. The recordings were only available in the repository system used by the company for seven days, after which they were deleted. All three data generation recordings were sent for transcription as soon as an activity was completed. Once the transcriptions were received by e-mail, checked for correctness and the documents saved on the same password-protected computer and secured external drive, the e-mails were deleted. The co-coder followed the same procedure.

The Skype interview transcription was de-identified by the candidate after it had been checked for correctness. The focus groups were already de-identified during the recording as the participants were given numbers by which to 'identify' themselves.

Field notes were also transcribed and de-identified and the transcriptions were used by the candidate and co-coder for data analysis.

4.2.4 Data analysis

The analysis of all the qualitative data generation was approached in the same manner and will be discussed in this section. Any exceptions will be described in the relevant micro-cycle.

The candidate recalled the wise words of Anselm (1987), cited in Saldaña (2009, p. 1), that in qualitative research, “the excellence of the research rests in large part on the excellence of the coding”. ATLAS.ti™ was used during the analysis of the qualitative data and Saldaña’s Coding Manual for Qualitative Researchers (Saldaña, 2009) guided the candidate in the coding, supported by the techniques of the ATLAS.ti 7 User Manual (Friese, ATLAS.ti User Manual, 2015, pp. 163-170). Transcriptions of the relevant data-generation activities were loaded onto the relevant hermeneutic unit of the ATLAS.ti™ program. The co-coder preferred to do the data analysis manually. After each meeting, when the findings were discussed, the candidate incorporated the information and/or changes into the relevant hermeneutic unit saved on the ATLAS.ti™ program.

The code in a qualitative inquiry is often a word or short phrase that symbolically assigns a summative, salient, essence-capturing, and/or evocative attribute to a portion of language-based or visual data. In “The Coding Manual for Qualitative Researchers”, Saldaña (2009, p. 47) states that “no one, including myself, can claim final authority on the “best” way to code qualitative data”. For the candidate, too, there was no “recipe” for coding. It was an iterative process of ‘noticing, collecting, thinking,...’ as Friese describes it in her book, *Qualitative Data Analysis with ATLAS.ti* (2014, pp. 12,13). The analysis of the qualitative data was indeed challenging, with many learning curves. One of the challenges was in the design and construction phase. Three prototypes of the curriculum were created (before the fourth and final prototype) and each had its own specific data-generating activities which had to be analysed and from which conclusions needed to be drawn to assist in the design of the next prototype. The candidate opened a hermeneutic unit for each of the qualitative activities to carry out her data analysis.

Deductive reasoning was applied in the coding of the data analysis, except for one specific data-generation activity. This was the micro-cycle where a focus group was held with occupational therapist trained in sensory integration and currently delivering OT-SI services working in diverse environments. Here the coding was based on inductive reasoning, conveying the experiences and perceptions of the participants, rather than being driven by theory on curriculum development or design (Delport & De Vos, 2011, p. 49). The reasons for this will be further elaborated in the discussion of the relevant micro-cycle.

The mainly deductive approach taken during data analysis of the majority of the qualitative data-generation activities was guided by theory (Fereday & Muir-Cochrane, 2006, p. 83). Coding for essential sections of data derived from theory or expectations related to curriculum design was applied. The aim was to move from generalised theory to specific design requirements and design propositions. These would contribute to the construction and design of the curriculum and to theoretical insights emerging from this research which could be used in the future (Friese, 2014, p. 14; Delport & De Vos, 2011, p. 48). Coding was thus primarily deductive and was led by the educational design research approach. Both single coding and simultaneous coding were used, with two or more codes applied in some of the data (Saldaña, 2009, p. 5). The design propositions used were those that were fundamental inputs for the design and construction of the curriculum. They either confirmed or supported aspects of a specific prototype of the curriculum or suggested changes or new additions to it (McKenney & Reeves, 2013, p. 107). All the design requirements identified through the coding were relevant to the functions of the curriculum or were decisive/important for its construction. They were essential to creating a curriculum that could pass successfully through the relevant institutional and statutory processes. The design requirements ultimately guided the candidate in achieving the aim of this research, namely the creation of the intended curriculum (McKenney & Reeves, 2013, p. 106).

Both the candidate and the co-coder followed the same process of data-analysis, using the four steps as proposed by Creswell (2013, pp. 180-187):

1. Organisation: The candidate organised the transcribed documents in hermeneutic units in the ATLAS^{ti}™ program. The co-coder preferred printed documents which she stored in a file, kept secure in a private cabinet. After each meeting where the findings were discussed, the candidate and co-coder identified and agreed upon the categories and themes supporting the design requirements and propositions, and the documents used for discussion purposes were handed to the candidate. The candidate kept all hard copies safe until the final prototype of the curriculum had been concluded, when all hard copies of documents containing transcriptions were shredded. All hard copies used during discussions were kept until the final prototype had been designed. Taking into account the iterative nature of the design process, this allowed the candidate where necessary to refer back and reconsider data,
2. Perusal of data: The candidate and the co-coder independently read through the transcriptions of the data. Once satisfied with the content, they identified text sections related to design requirements or design propositions. Text which revealed concepts that, while not expected could contribute to the design of the curriculum, were also highlighted.
3. Classification: The candidate and the co-coder identified words or phrases that were descriptive of a 'topic'. Once the codes were identified, 'families' or 'categories' that emerged during analysis and had definite meaning for the design process were grouped together.
4. Synthesis: This occurred when categories contributed to design requirements and/or design propositions.

Once classification had been done, the candidate and co-coder met to discuss their findings. This differed from 'traditional' data analysis, where discussions are held after the stage of synthesis. The candidate argued that design requirements and design propositions were 'constructed' over time and were not necessarily evident at the end of

each data generation and analysis activity. During her research, she had become acutely aware of the fact that qualitative research is not a linear process (although efforts were made to describe it in a linear manner to aid in following the research process). Creswell talks about the many 'non-linear' processes a researcher has to go through to make sense of data (2014, pp. 183,184). The candidate found this to be exceptionally true for educational design research. The challenge was to report the research in a coherent manner.

The findings of each data-generating activity will be discussed under the relevant phase and micro-cycle sections. In the next section, the methods used to ensure rigour and trustworthiness will be described.

4.2.5 Trustworthiness

The candidate strove for trustworthiness by implementing strategies which would ensure credibility, transferability, dependability and confirmability (Lincoln & Guba in Schurink, Fouché, & De Vos, 2011, pp. 419-421).

4.2.5.1 Credibility:

To ensure credibility, the candidate first involved participants who were knowledgeable and/or experienced in the context/field of a specific research phase objective. This ensured that the data would be relevant and valid. Credibility was also enhanced by the nature of educational design research and the involvement of stakeholders in the design of the curriculum (Walker in McKenney & Reeves, 2012, p. 71). Given the nature of this study, prolonged engagement and extended observations were not of the essence. Triangulation of data during data-analysis was done by a co-coder in three of the data generation activities, to control for researcher bias from the side of the candidate. During triangulation, consistencies were identified, and any inconsistencies found were discussed. Where inconsistencies in data analysis were identified, the candidate declares that, while her own bias towards the topic and the design of the curriculum played a role, this did not apply to inconsistencies in the participants' contributions. Where

inconsistencies were found, these were discussed and consensus was reached. Triangulation of data by the co-coder was thus essential to enhancing the credibility of the study. Document triangulation was also applied across the sources of the different micro-cycles. The consistencies that were found will be discussed as part of the findings of the different cycles. Member checking was not deemed an essential strategy, except in the final stages of the design and construction of prototype 4 of the curriculum. The candidate argued against the need for member checking because of the nature of the research and the clear and non-conflicting findings. It was however important to carry out member checking right at the end of the design process, again involving international experts in sensory integration. This will be discussed in 4.5.3.1 (Objective 4.1).

4.2.5.2 *Transferability:*

In educational design research, the design requirements and design propositions which translate into theoretical understandings will generate knowledge which can be transferred to 'other situations' (Schurink, Fouché, & De Vos, 2011, p. 420). For this study, this could include the design of other professional master's degrees in occupational therapy. According to Schurink, Fouché and de Vos, the researcher can "greatly strengthen the study's usefulness for other settings" by the use of "multiple cases, multiple informants or more than one data-gathering method" (2011, p. 420). The development of design requirements and design principles will be addressed in the discussion of the findings of the different design cycles, where the theoretical understandings will be presented.

4.2.5.3 *Dependability:*

In order to achieve high levels of dependability, the candidate aimed for rich and thick descriptions of her methodology, together with thick descriptions of how the design process evolved (Botma, M, Mulaudzi, & Wright, 2010, p. 234). Educational design research is an evolving process, so it was important to provide thick and rich descriptions of each micro-cycle's "conditions" and how the design of research activities evolved during the research process. An audit trail recording evidence of the research was kept.

It included summaries of the literature and document extracts that contributed to design requirements and design propositions, the questions for the semi-structured interviews, guiding documentation for the facilitator of the focus groups, e-mail interviews, transcripts of focus groups, documents of data analysis, and discussion documents.

4.2.5.4 Confirmability:

Confirmability is a measure of the objectivity of a study and of the degree to which another researcher may reach the same conclusions under the same conditions. The candidate strove to give thorough, organised descriptions of the research process, including the objectives of the phases in each micro-cycle, the decisions taken, the activities involved, and the findings and how these contributed to the design of the curriculum (Botma, M, Mulaudzi, & Wright, 2010, p. 235). Strategies discussed under dependability (cf. 4.2.5.2) also contributed to the subjectivity of this study. These included giving thick and rich descriptions and keeping an audit trail. The use of a co-coder as discussed under credibility also contributed to confirmability.

Trustworthiness was aimed for at all times during the research process. A novel aspect for the candidate was that the topic of the research was very clear. During interviews and focus groups clear, focused responses were drawn from participants. High levels of agreement were reached between the participants, making analysis of the data less complicated. Although the design of a curriculum is to a large extent an academic topic, it was interesting that emotional responses were evident in the micro-cycle which consisted of the two focus groups. In the first group, participants shared their realities of OT-SI service delivery in the South African context, while in the second group participants who had already obtained master's degrees reflected on their own journeys. These will be discussed in the relevant sections of this particular micro-cycle.

Trustworthiness is among the ethical obligations of conducting research. Adhering to the ethical principles of a study in turn contributes to trustworthiness. The ethical considerations will now be presented.

4.3 *Ethical considerations*

- The research protocol was submitted to the Health Sciences Research Ethics Committee (HSREC) of the University of the Free State, and ethical clearance was obtained (ECUFS: 179/2014) (Annexure A). Ethical clearance from the HSREC obliges the researcher to abide by the universal ethical health principles laid down by the South African National Health Act. Ethical research principles, as prescribed in the approval letter for the research of the HSREC, are also non-negotiable.
- Participants were always fully informed, not only of the aim of the study but also of the purpose and implications of their participation. They were given the option to withdraw at any time without consequences (Annexures C, E, J, K, P & Q).
- All participants were assured that all information obtained during the research process would remain confidential and that confidentiality would be maintained at all times (Annexures C, E, J, K, P & Q).
- Participants were at all times informed of the mode of the data generation/collection. The text they supplied would be transcribed, their verbal contributions would be recorded and transcribed, for example in the focus groups, and their responses to the quantitative questionnaires would serve as numerical data (Annexures C, E, J, K, P & Q).
- It was made clear to the participants that there would be no personal incentives or rewards for participation, but that their reward would be in the knowledge that they would be making a contribution to the profession (Annexures C, E, J, K, P & Q).
- The candidate also asked participants' permission to publish the results in the form of a thesis, in peer-reviewed journals and/or presentations at congresses (Annexures C, E, J, K, P & Q).

- Conflict of interest between the candidate and the South African Institute for Sensory Integration (SAISI) was a possibility. When obtaining permission to use the data base of names of occupational therapists who had received training in sensory integration through SAISI, the candidate made clear the importance and relevance of this research, noting also that the results could benefit SAISI in their mission to deliver sensory integration courses addressing the needs of their consumers.
- The candidate is committed to giving due credit to all who assisted, supported and contributed to this research.

4.4 Delimitation of the research

The following delimitation applied to this research:

The evaluation and reflection phase (the third phase) of design research was not implemented in this study. The implementation and evaluation of the designed curriculum would be a longitudinal and comprehensive project, determined by various processes which would be influenced by professional, academic and statutory stakeholders. Due to factors which could not be controlled and could have an “unending” effect on this project, the envisaged evaluation of, and reflection on the completed curriculum would only be rolled out after its implementation. Among these factors would be the approval and accreditation of the curriculum by institutional (University of the Free State), professional (Health Professions Council of South Africa (HPCSA)) and national bodies (Department of Higher Education and Training (DHET), Higher Education Quality Committee (HEQC) and the South African Qualifications Authority (SAQA)). The research process will thus be concluded with the prototype of the curriculum that will serve as the final intended curriculum.

4.5 The actual educational design research process that evolved during this study

During the research process, the conceptual plan (cf. Figure 3.3), developed in the initial stages, changed. This reflected the flexible nature of educational design research (McKenney & Reeves, 2013, p. 74) and the candidate's own deepening of knowledge and insight into the design process. This led to changes in the initial decisions and planned activities, contributing to the actual research process as implemented, presented in Figure 4.1. Changes in the international educational landscape also impacted on the research process. During the analysis and exploration phase, the International Council for Excellence in Ayres Sensory Integration (ICEASI), indicated that the current training courses given by SAISI were on a postgraduate certificate level and did not necessarily meet the requirements for a master's level (ICEASI, 2016). The general thought was that the current South African Institute for Sensory Integration (SAISI) training courses should become part of a master's qualification (the candidate can confirm this, having been on the SAISI board for the past 34 years; it was never documented, but accepted as a general assumption). The quantitative information on the perceived level of expertise and competencies acquired by occupational therapists who had completed the SAISI courses was thus no longer needed in the analysis and exploration phase. It was however decided to use the questionnaire as part of the design of the second prototype, the candidate arguing that information obtained from this population group would contribute to the design process. This will be further discussed in 4.5.2.1.1.

The other changes that were made emerged from a deepened understanding of educational design research, of the realities of the process itself, and of the aims and phase objectives for each micro-cycle of the iterative process as it was finalised. In the initial research plan (cf. Figure 3.3), the candidate envisioned that the first prototype of the curriculum would be sent to curriculum experts for their views and opinions. Once the first prototype had been designed and constructed, she realised that not only would the curriculum experts' input be more valuable at the end of the design process, but that it would be better to secure input at that stage from a group of occupational therapy academics who were also lecturers for SAISI. Though she had not initially foreseen this, it became a valuable part of data generation. Another group identified as contributors was

occupational therapists who had already obtained a master's degree. Through her own experience, and specifically during the design of the curriculum, the candidate again became aware of challenges in the journey of 'becoming a master'. She wanted to ensure that possible challenges and enablers were identified, and that the findings would be used creatively in the design and construction process of the curriculum.

During the protocol development stage, a delimitation was set: the projected curriculum would have a specific focus on sensory integration in the paediatric field of occupational therapy. This delimitation had to be lifted, as data obtained in the exploration and analysis phase (and confirmed by participants in the first micro-cycle of the design and construction phase), showed that to be a master clinician in the field of sensory integration called for competencies of assessment and intervention over the lifespan. This had an impact on an initial long-term goal and on the content of curriculum. Weighing goals and adapting them according to data obtained, revealing different needs in the field, is very much part of the process of educational design research (McKenney & Reeves, 2012, p. 106).

The bigger picture of the actual educational design research process as it evolved is shown in Figure 4.1 and will be referred to as a 'research process map'. The research process and the findings and results obtained will be presented in detail in 4.4.1.

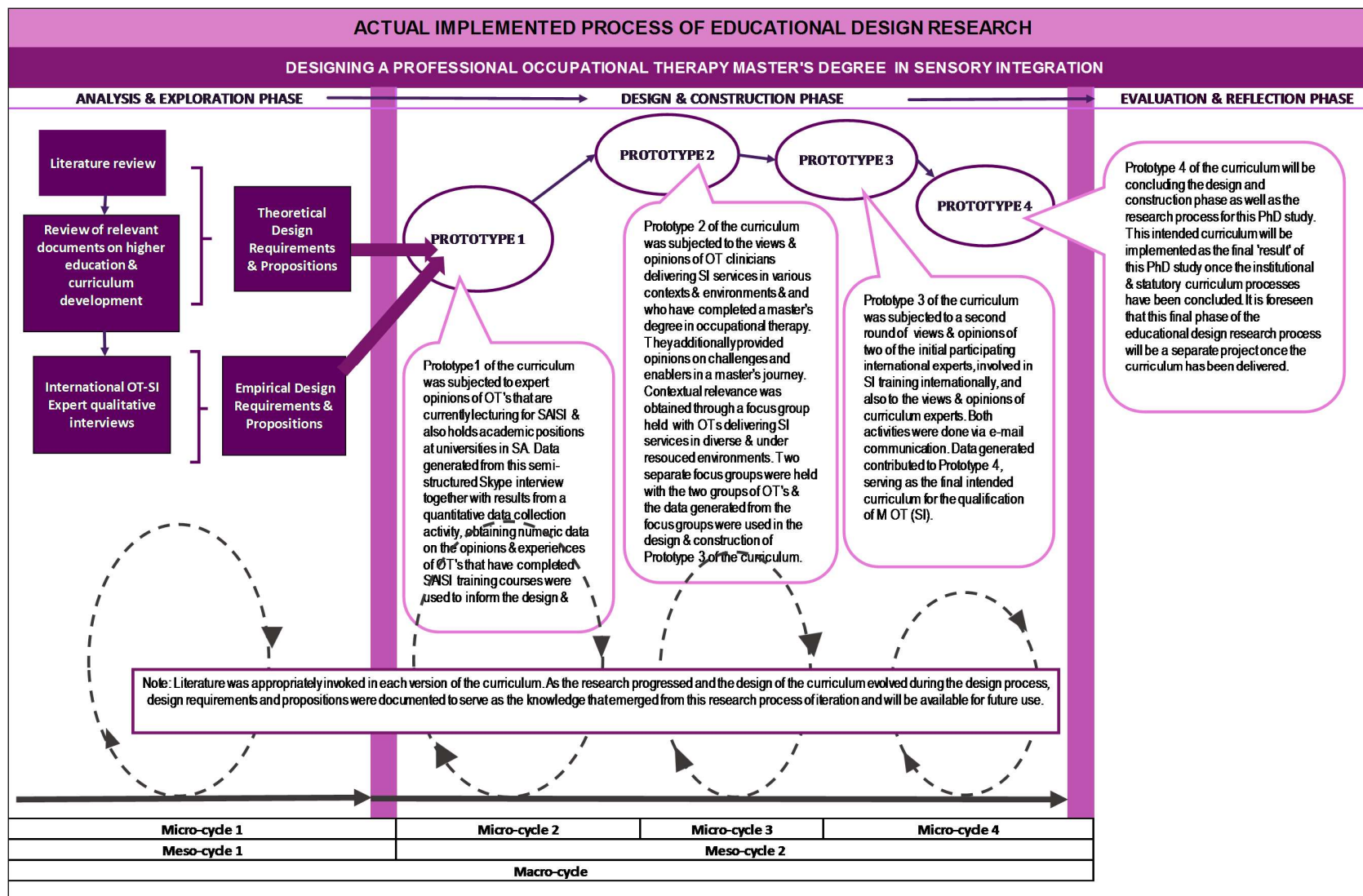


Figure 4.1: Actual implemented process of educational design research

4.5.1 Analysis and exploration phase: Micro-cycle 1

Although analysis and exploration is the first phase of educational design research (cf. Fig 4.1), the candidate had the privilege of a 'preparation' phase, developing a research proposal on a SANTRUST pre-doctoral proposal development programme which allowed her to consider and clarify objectives for the first phase (cf. 1.1). In hindsight, she realized that this was a valuable element in her 'exploration' of educational design research, giving her an opportunity to 'grapple' with the methodology to be implemented.

In this phase, she had to establish the relevance of the intended curriculum, as well as consistency in terms of identifying a logical and cohesive structure for it, in order to arrive at the main aim of this phase, namely a first skeleton prototype of the curriculum. It was necessary to identify literature that could contribute to partial design requirements and propositions. The identified literature not only contributed to theoretical understandings but also guided the development of a first skeleton prototype of the intended curriculum. The candidate argued that it would be important to explore and identify the key master-level competencies in this phase, so as to inform sensory integration as a field of specialization and to assist in the design of the skeleton prototype of the curriculum. This had to be ready for submission to an iterative process of design and construction, leading ultimately to arrive at a prototype that would be ready for implementation. Four objectives were identified for the analysis and exploration phase. They are presented in Table 4.1, together with the activities that were used and the relevant resources.

Table 4.1: Aim of the phase, phase objectives, activities and sources for the micro-cycle in the analysis and exploration phase

1. Analysis and Exploration Phase			
Aim of phase: To arrive at a first skeleton prototype of the curriculum			
Phase objectives	Activities	Sources	
1.1 To establish the core/key components of an effective and internationally acknowledged curriculum in the field of SI	1.1.1 Review literature related to curriculum theory and curriculum development with the function of identifying curriculum components to be included in the design	Literature and documents also used in 1.2	1.5 To formulate partial design requirements and initial design propositions emerging during this phase
1.2 To use identified and extracted literature together with relevant regulatory guidelines to direct the design of a professional master's degree in SI	1.2.1 Scrutinize literature and documents of relevant regulatory bodies to extract, synthesize and summarise the theory with the function of creating a textual foundation and identifying initial design requirements and propositions for inclusion in the design of the intended curriculum	Documents of HEQSF SAQA WFOT HPCSA ICEASI UFS	
	1.2.2 Select literature with the function of informing the questions of semi-structured interviews with international experts in the field of ASI®		
1.3 To explore and identify the key master-level competencies that will inform sensory integration as a field of specialisation	1.3.1 Obtain the views and opinions of international experts on core competencies needed to become a master clinician in the field of sensory integration using semi-structured, e-mail interviews with the functions of informing the content and design of the intended curriculum	International experts in the field of ASI® and first-generation scholars of Jean Ayres	
1.4 To draft a first skeleton prototype of the curriculum	1.4.1 Data obtained in Objectives 1-3 were applied to design and construct a first skeleton prototype of the curriculum	Theory, data, and creativity	

4.5.1.1 Phase objective 1.1: Establish the core/key components of an effective and internationally acknowledged curriculum in the field of sensory integration

This objective was to establish the core/key components of an effective and internationally acknowledged curriculum in the field of sensory integration.

The literature reviewed in Chapter 2 contributed to identifying the core components of a curriculum. Certain components were repeatedly mentioned in the literature as core in various authors' work and were therefore deemed to be important. The

candidate used the work of Eisner (In McKenney & Reeves, 2012, p. 72), Stefani (2009) and van den Akker (2009, 2013), together with guidelines in documents from the Council of Higher Education (CHE) of South Africa, to extract and develop a list of core components relevant for the design of this curriculum. Figure 4.2 illustrates how the different authors and the curriculum components addressed in the documents of the CHE contributed to the curriculum components.

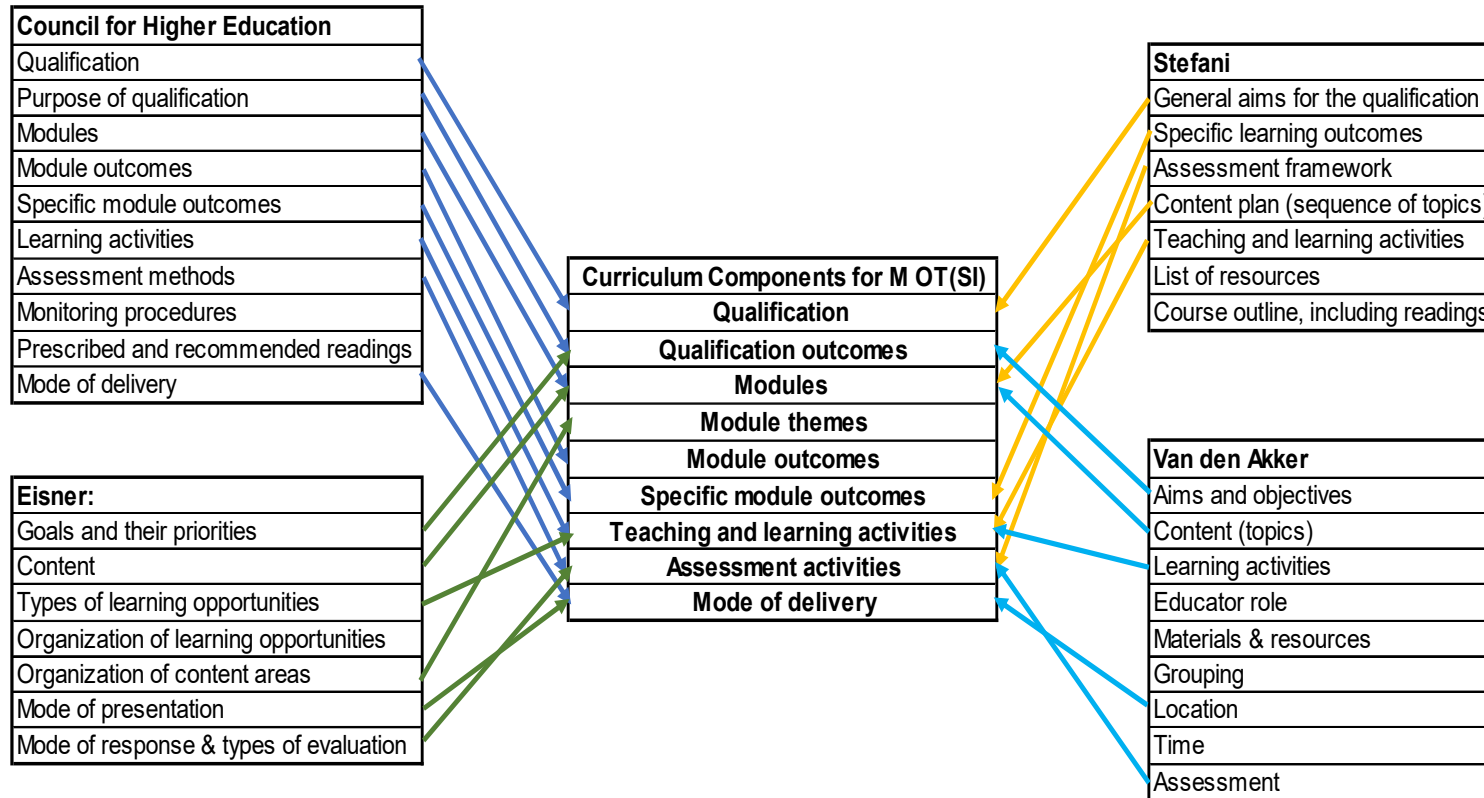


Figure 4.2: Curriculum components for a professional Master's degree in Occupational Therapy in sensory integration

The work of Eisner and Van den Akker is closely linked to educational design research, as was discussed in the section on the background to educational design science research (cf. 2.7.1). Van den Akker's aims and objectives, content (topics), learning objectives, location and assessment were acknowledged as components by the mentioned authors and by the documentation of the CHE. Eisner's goals and priorities, content, types of learning opportunities, mode of presentation and mode of response and types of evaluation were also in agreement with those of other authors (In McKenney & Reeves, 2013, p. 72). Stefani's work (Stefani, 2009, p. 50) is focused on higher education and was discussed in the section on relevant perspectives on curriculum and curriculum development (cf. 2.6.1). The curriculum components that she proposes in her writings and that are in agreement with the other authors are the general aims for the qualification, specific learning outcomes, assessment framework, content plan, and teaching and learning activities.

Specific curriculum components identified in CHE documents, in those of the University of the Free State and as reviewed in the sections respectively on the Council on Higher Education, National Qualification Framework, the South African Qualification Authority (cf. 2.4.2.2) and the institutional and statutory curriculum process (cf. 2.6.2) include modules, module outcomes, specific module outcomes, assessment methods and modes of delivery. Since the choice of curriculum components depends on the specific qualification and its outcomes, the qualification in this study had to be identified and developed before the curriculum components could be designed. It thus includes those curriculum components appropriate for a professional master's degree in occupational therapy in sensory integration (cf. Figure 4.2).

Module themes was the only component that was added by the candidate after data from the e-mail interviews with the international experts had been analysed and once themes had clearly emerged from the data; it will be discussed under Objective 1.4 (cf. 4.4.1.4). Eisner's seven dimensions of a curriculum (In McKenney & Reeves,

2013, p. 72) supported the component of ‘themes’ and was thus included and linked to the curriculum components specifically for a professional master’s degree in occupational therapy (cf. Figure 4.2).

The identified curriculum components which were specified in the first skeleton prototype, but were as yet without content, were the qualification outcomes, modules, module themes, module outcomes, specific module outcomes, teaching and learning activities, assessment activities and mode of delivery.

Objective 1.2 also depended on the literature and documents. In the research process, Objectives 1.1 and 1.2 were attended to concurrently.

4.5.1.2 Phase objective 1.2: To use identified and extracted literature together with relevant regulatory guidelines to direct the development of a professional master’s degree in sensory integration

The objective of this phase was to use the relevant extracted literature together with regulatory guidelines to direct the development of a professional master’s degree in sensory integration. As noted in the introduction to Chapter 2, the literature provided a theoretical background to this study, but also offered sources that could contribute to design requirements and design propositions (cf. Chapter 3.4). During the process of reviewing documents and literature any relevant references found that could have contributed to the design of the curriculum were extracted.

The candidate extracted the relevant literature in Chapter 2 and presented the extracts as a summary at the end of the appropriate sections (cf. Chapter 2). She also indicated whether she thought an extract could contribute to design requirements or design propositions. Her decisions on the extraction of the literature were based on the work of McKenney and Reeves, who describe design requirements as the “criteria” to which a product (curriculum) should adhere, providing background and/or specifications under which the product (curriculum) will be delivered (or function)

(McKenney & Reeves, 2012, p. 112). The design requirements thus define what the functions of the curriculum will be and their context. A design requirement could also be a decisive/crucial element in constructing the curriculum. Deciding on which extracts from the literature would contribute to design propositions depends on whether they help with “how” to achieve the curriculum and “why” certain features/characteristics should be included in the design (McKenney & Reeves, 2012, p. 112). Design propositions thus laid a foundation for decisions taken on the core underpinning design ideas (McKenney & Reeves, 2013, p. 122).

In considering the extracts found during the literature and document review as possible contributions to design requirements and/or design propositions, the candidate identified definite sections of the literature which clustered naturally into categories and components. These will now be presented and discussed.

4.5.1.2.1 *Qualification and curriculum requirements*

In the category of qualification and curriculum requirements, sources were found in the literature which contributed both to partial design requirements and to initial design propositions (cf. Table 4.2). Documents and publications from the South African Government and the CHE gave core guidelines on what should be part of a qualification and curriculum. Literature extractions (a) 1-10, 12-14 and 16 provided criteria that had to be adhered to in order to achieve an acceptable solution for the real-world problem of designing a curriculum which as yet did not exist. (McKenney & Nieveen, 2006, p. 106). The suggested criteria, for example, included “skills that will contribute to society and support economic and social development” (Hay & Marais, 2011, p. 232) and the importance of reflecting the “where” in terms of the factors ‘outside’ the curriculum (Lee, Steketee, Rogers, & Moran, 2013, pp. 69-71). The extracts also emphasised the importance of considering the local context in the design of the curriculum (World Federation of Occupational Therapists, 2014; Eisner in McKenzie & Reeves, 2012; Doll in Du Toit, 2011; Van den Akker, Gravemeijer, McKenzie, & Nieveen, 2006).

Table 4.2: Extractions related to qualification and curriculum requirements

a)	Qualification and curriculum requirements	
1	DReq	Qualifications must invest in students' intellectual competencies and skills that will contribute to society and support economic and social development. (Hay & Marais, 2011, p. 232)
2	DReq	Curriculum needs to be designed according to an outcomes-based approach. (Nkomo, 2000, p. 10).
3	DReq	Master's Degree (Professional) is on NQF Level 9. (Council on Higher Education, SA, 2013, p. 38)
4	DReq	Degree must describe the broad fields of the programme and a maximum of one specific qualifier may be added. (Council on Higher Education, SA, 2013, p. 38).
5	DReq	Must have a minimum of 180 total credits. (Council on Higher Education, SA, 2013, p. 38)
6	DReq	Credit allocation needs to be done in terms of modules, mounting up to the total qualification credit. (South African Government, 2007, p. 8)
7	DReq	Qualification must be professionally-orientated, geared towards high-level cognitive engagement to advance knowledge towards a profession and specialised services. (Council on Higher Education, SA, 2013, p. 5)
8	DReq	Components involved in the curriculum need to be identified. (Van den Akker, Gravemeijer, McKenney, & Nieveen, 2006, p. 112) (Stefani, 2009, p. 50) (McKenney & Reeves, 2012, p. 69)
9	DReq	Qualification must include either a single research or technical project or a series of smaller projects comprising at least a quarter of the total credits. (Council on Higher Education, SA, 2013, p. 38)
10	DReq	Consult and align the generic learning outcomes of the curriculum with the NQF level descriptors and qualification descriptors. (South African Government, 2007, pp. 11,12)
11	DProp	Aspire for alignment and internal consistency between curricular components. (Van den Akker, Gravemeijer, McKenney, & Nieveen, 2006, p. 112.113)
12	DReq	Curriculum must be designed considering the profession of occupational therapy, the students who will be users of the curriculum, and will also consider the realities of the South African context. (Doll in Du Toit, 2011, p. 61)
13	DReq	Ensure contextual understanding and its variabilities in terms of "real-world settings". (Van den Akker, Gravemeijer, McKenney, & Nieveen, 2006, p. 121)
14	DReq	The influence of context on the different dimensions of a curriculum needs consideration in the design process. (Eisner In McKenney & Reeves, 2012, p. 72)
15	DProp	Curriculum must be 'built' considering the local context and relevant for service delivery needs of the country. (World Federation of Occupational Therapists, 2014)
16	DReq	Curriculum outcomes in Health Sciences must reflect the "where" in terms of the factors 'outside' of the curriculum. (Lee, Steketee, Rogers, & Moran, 2013, pp. 69-71)
17	DProp	Accounting of curriculum costs must be considered throughout. (Price Waterhouse Cooper, 2014, p. 3)
18	DProp	Consideration of student and academic mobility regarding possible users as well as lecturing staff. (Altbach, Reisberg, & Rumbley, 2010, p. 3)

DProp = Design Proposition

DReq = Design Requirement

Literature extractions (a) 11, and 15-17 supplied inputs for the design process, culminating in initial design propositions (McKenney & Reeves, 2012, p. 107). The alignment of curriculum components during the design process contributed to the “how” of the construction process (Van den Akker, Gravemeijer, McKenney, & Nieveen, 2006, p. 112.113). Extractions (a)16 and 17 were of relevance to this degree, especially in terms of “how” the curriculum was designed and constructed to attract distant students, for whom the costs not only of obtaining the qualification but also of travelling and accommodation needed to be borne in mind (PricewaterhouseCoopers, 2014). The mode of delivery immediately became relevant and needed to be considered in the design process. As a qualification in a specialist field, the availability and mobility of specialists to assist in delivering the programme had to be taken into account in the design of the curriculum (Altbach, Reisberg, & Rumbley, 2010).

The next category that was revealed in the literature and document review was that of the components and structure of a curriculum

4.5.1.2.2 *Components and structure*

Requirements that were crucial to the components and structure of the curriculum (McKenney & Reeves, 2012, p. 106) were clearly indicated in the extractions (b) 3-10. These requirements also contributed to a design requirement and will be presented in Table 4.3. Additionally, the inherent criteria of the constructed outcomes of the curriculum were crystalized (Council for Higher Education, SA, 2013; South African Qualifications Authority 2012; Council for Higher Education, 2011; South African Government, 2007; Biggs & Tang, 2007; Spady in Nkomo, 2000), as well as the need to include assessment standards in the outcomes (Spady In Nkomo, 2000; South African Qualifications Authority, 2001; South African Government, 2014).

Table 4.3: Extractions related to components and structure

b) Components and Structure			
1	DProp	Start curriculum design by identifying the knowledge, skills and attitudes that students will ultimately attain.	(Spady, 1999 In Nkomo, 2000, p. 11)
2	DProp	Identify the end-point outcomes in observable behaviours that can be assessed.	(Tyler In McKenney & Reeves, 2012, p. 71).
3	DReq	Set expectations that students need to attain in the outcomes.	(Spady, 1999 In Nkomo, 2000, p. 11)
4	DReq	Specify expected competencies that form the basis of the assessment criteria and that refer to particular contexts for performance.	(Spady, 1999 In Nkomo, 2000, p. 11) (South African Qualifications Authority, 2001, p. 16 & 21)
5	DReq	Standards that will guide learning and assessment must be reflected in the outcomes as they will serve as assessment criteria.	(South African Government, 2014, p. 4)
6	DReq	Required competencies must be reflected in the learning outcomes.	(Biggs & Tang, 2007, p. 89)
7	DReq	There needs to be clarity in outcomes, alignment between outcomes, exit level, and teaching and learning activities.	(Council for Higher Education, 2011, p. 13)
8	DReq	Specific learning outcomes need to be compared to and anchored in the relevant level descriptors.	(Council for Higher Education, SA, 2013, p. 18).
9	DReq	Designed programme must state the learning that is necessary to achieve the intended outcomes.	(South African Government, 2007, p. 8)
10	DReq	NQF Exit Level 9 outcomes must guide the specific outcomes and assessment developed for the curriculum.	(South African Qualifications Authority, 2012, pp. 11,12)

DProp = Design Proposition

DReq = Design Requirement

Both extractions (b) 1 and 2 contributed to design propositions, offering guidance on what needed to be done first in the design of the curriculum (McKenney & Reeves, 2012, p. 107). The literature and documents identified the core competencies that a student would need to attain to become a master in the relevant specialist field, and were thus fundamental to constructing and aligning the outcomes of the curriculum. This literature also contributed to and guided the semi-structured interview questions posed to the international experts in the field of ASI[®], to be presented in 4.1.4 Phase objective 1.3.

4.5.1.2.3 Competencies

Following on ‘components and structure’, the next category was that of ‘competencies’. Extractions related to competencies were found in a document of the

ICEASI (ICEASI, 2016), as well as in a document of the CHE (Council on Higher Education, SA, 2013, p. 38).

Table 4.4: Extractions related to competencies

c) Competencies			
1	DReq	<p>Adherence to international standards set by ICEASI:</p> <ul style="list-style-type: none"> • understanding of the breadth of ASI@-related and underpinning knowledge. • critical awareness of current problems and/or new insights in the field. • conceptual understanding that enables critical evaluation of current research, as related to ASI. • originality in applying knowledge, together with practical understanding of how established techniques of research and enquiry are used for knowledge creation and interpretation. • Evaluate methodologies and critical appraisal thereof together with identification of gaps as applied to the four pillars practice, research, education, and advocacy. • Communicate effectively on complex ASI@-relevant matters to a range of audiences, dependent on need, and as applied to the four pillars. 	(ICEASI, 2016)
2	DReq	<p>Graduates exiting at NQF level 9 must be able to contribute to development of knowledge at an advanced level and be shaped for advanced and specialised professional employment:</p> <ul style="list-style-type: none"> • high level of theoretical engagement. • intellectual independence. • apply knowledge to solve complex problems in relevant areas of professional practice. • attend to complex matters in an efficient and creative manner. • compose and critically appraise analytical documents • use information and data to make sound judgements and communicate thereon to various audiences. • be self-directed and innovative in problem solving. • plan and implement tasks independently and with autonomy. • continue with professional development regarding knowledge, understanding and skills. 	(Council on Higher Education, SA, 2013, p. 38)

DProp = Design Proposition

DReq = Design Requirement

Both (C) 1 and 2 extractions contributed to a design requirement presented in 4.5.1.5. The competencies identified by ICEASI (2016) needed to be included in the curriculum, as one of the aims of the research was to design a curriculum that would be internationally acknowledged. Had the curriculum not included the competencies indicated by the ICEASI, the chances of international acknowledgment would have been minimised. The competencies identified in the HEQSF as NQF Level 9

competencies for a professional master's degree (Council on Higher Education, SA, 2013, p. 38) are non-negotiable, as without them a qualification will not be recognised either by the institution or the relevant statutory bodies.

The next category revealed in the extractions from the literature and documents was that of 'teaching and learning' activities.

4.5.1.2.4 Teaching and learning activities

Two of the extractions presented in Table 4.5, taken from CHE documents ((d) 2 and 3), culminated in the same design requirement as the previous extractions and will be presented in 4.5.1.5. Work-integrated learning (WIL) is inseparable from training in the field of health sciences, including occupational therapy, and is a requirement of the CHE (Council for Higher Education, 2011, p. 13) (cf. 2.6.1.1). WIL identifies definite teaching and learning activities and these, addressed in 2.6.1.1, were considered relevant and were included as teaching and learning activities in the curriculum. A single research or technical project or a series of smaller projects demonstrating innovation or professional research expertise are set as a requirement by the CHE (Council on Higher Education, SA, 2013, p. 38) and thus supported the above-mentioned design requirement.

Table 4.5: Extractions related to teaching and learning activities

d) Teaching and learning activities			
1	DProp	Teaching and learning activities are constructed according to the curriculum designer's philosophical view on how students learn: Constructivism: students need to be engaged in active, deep learning, building their knowledge in terms of what they already understand and reflecting thereon.	(Biggs & Tang, 2007, p. 21)
2	DReq	Work-integrated activities need to be identified and integrated into curriculum.	(Council for Higher Education, 2011, p. 13)
3	DReq	Qualification must include either a single research or technical project or a series of smaller projects demonstrating innovation or professional expertise.	(Council on Higher Education, SA, 2013, p. 38)
4	DProp	A professional profile must be kept indicating competencies, publications, presentations, workplace innovations and initiatives; and professional development activities.	(World Federation of Occupational Therapists, 2014)
5	DProp	Structured supervision should be included as well as the opportunity to supervise.	(World Federation of Occupational Therapists, 2014)

DProp = Design Proposition

DReq = Design Requirement

Extractions from the literature, especially from (d) 1, supported design propositions related to the construction of teaching and learning activities. Integrated in WIL is a philosophical view based on constructivism, which holds that students learn through active engagement, as noted in (d) 3 (Biggs & Tang, 2007, p. 21). Deep learning is needed, and opportunities must be provided where students can build their knowledge both in terms of what they already understand and their reflections on this knowledge. Other teaching and learning activities that support the theory of constructivism were considered during the design process and included in the curriculum. Reflection was one of the teaching and learning activities that emerged strongly during the design of the curriculum and thus needed consideration.

The recommendations of the World Federation of Occupational Therapists (WFOT) on the keeping of a professional profile ((d) 4) (World Federation of Occupational Therapists, 2014) did not emerge further during the design process, but were seen by the candidate as valuable and an optional activity that could be valuable during the delivery of the curriculum. However, what did emerge during the design and

construction phase was the keeping of a portfolio as part of the teaching and learning activities, and this will be discussed in 4.5.2.1.1.4.2. Supervision as a teaching and learning activity((d) 5) (World Federation of Occupational Therapists, 2014) was included in the designed curriculum as part of the research project. The fact that it was included in the research project and not in other teaching and learning activities was interesting. The candidate's reasoning, taking into account the results of the design process, was that given the nature of this qualification the role of mentoring was more valued and appreciated than that of supervision. Mentoring will be discussed as part of the results of the design and construction phase.

Assessment was the next category that was revealed by the review of the literature and relevant documents.

4.5.1.2.5 Assessment

Most of the extractions on assessment were found in the documents of the CHE (Council for Higher Education, 2011; Council for Higher Education, 2011; Nkomo, 2000), and are presented in Table 4.6. Definite requirements relating to assessment are set by the CHE, and these needed to be integrated in the curriculum outcomes. The extractions (e) 1-6 therefore supported the design requirement already shown in 4.5.1.5. It was clear from the CHE literature that the competencies described in the outcomes had to be assessed, the standard of performance related to competencies and types of assessment had to be identified, a range of assessment activities had to be identified and included, and clarity on them was important. Extraction (e) 6 proposes that feedback be a "core building block", especially in WIL. Feedback is an important formative assessment method in WIL (Council for Higher Education, 2011, p. 13), and thus had to be included in the curriculum.

Table 4.6: Extractions related to assessment

e) Assessment			
1	DReq	Underpinning competencies that will be assessed must be integrated in the specific outcomes.	(Nkomo, 2000, p. 21).
2	DReq	Types of assessments need to be identified and integrated into the curriculum.	(Council for Higher Education, 2011, p. 43)
3	DReq	Expected standard of performance, quality and where relevant the context and conditions must be described.	(South African Qualifications Authority, 2001, p. 21)
4	DReq	Assessment must be inclusive of a range of assessment activities.	(Nkomo, 2000, p. 22)
5	DReq	Clarity in terms of assessment and assessment activities is essential.	(Council for Higher Education, 2011, p. 13)
6	DReq	Student feedback forms a core building block in work-integrated learning and needs to be provided for in the curriculum.	(Council for Higher Education, 2011, p. 13)
7	DProp	Identifying the end-point outcomes in observable behaviours that can be assessed.	(Tyler In McKenney & Reeves, 2012, p. 71).

DProp = Design Proposition

DReq = Design Requirement

Extraction (e) 7 provided a core idea on the design and thus supported design propositions by offering guidance on the construction of the curriculum in terms of identifying end-point outcomes in observable behaviours that could be assessed (Tyler in McKenney & Reeves, 2012).

A last category of extractions was that of entry requirements. This was part of Objective 1.2, which aimed at identifying relevant literature and regulatory frameworks which could assist and guide the development of a professional master's degree in sensory integration. Although it was not part of the formal curriculum, the candidate argued that to investigate entry requirements was relevant as part of the general information pertaining to the curriculum.

4.5.1.2.6 Entry requirements

One extraction ((f) 1) in Table 4.7 provided definite criteria for the curriculum and thus also supported a design requirement. The extraction was backed by two resources and was added as an entry requirement as part of the general information on the M

OT (SI) qualification. The two other extractions informed design choices, firstly on what should be set as entry requirements ((f) 2) and secondly on recognition of prior learning (RPL) ((f) 3). RPL emerged again in the design and construction phase and will be further discussed in 4.5.3.6.1.

Table 4.7: Entry requirements related to the qualification

f) Entry requirements			
1	DReq	Entry requirement of appropriate recognised occupational therapy qualification (Bachelor Honours Degree).	(World Federation of Occupational Therapists, 2014) (Council on Higher Education, SA, 2013, p. 39)
2	DReq	At least three years of experience and at least half of this time working in the area of speciality/advanced practice.	(World Federation of Occupational Therapists, 2014)
3	DProp	Recognition of prior learning should be considered where relevant and deemed to be equivalent to the prescribed minimum admission requirements, and consideration of recognition of other forms of prior learning for entry or granting advanced standing in the programme	(Council on Higher Education, SA, 2013, p. 22)

DProp = Design Proposition

DReq = Design Requirement

In concluding phase objective 1.2, the candidate acknowledges that her expertise is not in the field of curriculum design. This part of the literature and document review was therefore most informative and a valuable learning curve for her. In the process of writing up the literature for this objective, she developed a criteria checklist against which a professional master's degree could be compared (cf. Annexure B). The aim of the checklist was to provide her with a quality assurance activity against which she could measure the designed curriculum during the process of design and construction. The checklist ensured that all the relevant categories and components of the curriculum, identified during the literature and document review, were attended to.

Once the candidate had concluded the literature and document review, establishing their relevance in terms of the initial information needed to design a first draft prototype of the curriculum, and had decided on relevant questions to ask the international experts in the field of ASI®, she proceeded with Phase objective 1.3.

4.5.1.3 Phase objective 1.3: Explore and identify the key master level competencies that will inform sensory integration as a field of specialization

The objective here was to explore and identify the key master level competencies that could inform sensory integration as a field of specialisation.

4.5.1.3.1 Data sources

International experts from the United States were identified with the help of a world-renowned scholar in the field of Ayres Sensory Integration® (ASI®). After being identified, five international experts who were first-generation scholars of the original work of Jean Ayres on sensory integration were approached for participation. They were contacted with an e-mail and a letter of invitation giving them information on the research, the phase in which they were invited to participate, with expectations for the project attached (cf. Annexure C).

4.5.1.3.2 Research activity and method of data generation

Semi-structured e-mail interviews were used to obtain the views and opinions of the international experts on the core competencies needed to become a master clinician in the field of sensory integration. The use of e-mail interviews was chosen, since it would not have been possible to bring highly esteemed international sensory integration experts, living all over the United States, some of them traveling extensively, together in one room at one time to conduct interviews. A Skype interview session was considered but time remained a challenge, given the experts' heavy schedules, combined with the fact that some of them lived on the east coast and some on the west coast of the United States. The option of e-mail interviews had definite benefits, among them the degree of control they offered, an audit trail that could be established with relative ease as the 'raw' answers were immediately available (Hamilton & Bowers, 2006, pp. 827-829, 833) and confidentiality which could be guaranteed through the steps mentioned under data management (cf. 4.2.3).

The semi-structured questions were developed after the conclusion of the literature and document review, which covered the requirements of the CHE for a new qualification, curriculum design/development, the requirements of all relevant professional bodies, and the available international guidelines (cf. Phase objectives 1.1 and 1.2).

After establishing that the curriculum would be on a meso-level, meaning that it would be designed for presentation at an institutional level (Van den Akker, 2013, p. 55), the candidate realised that the next question to be answered would be: “What needs to be taught and learned, and how can this be done so as to produce master clinicians in the field of sensory integration?”. In establishing the “what and how” of the curriculum, the work of Du Toit (2011), Clements (2007) and Van den Akker (2006) were core, as discussed in Chapter 2: 2.6.

The semi-structured questions included in the e-mail interview were:

1. What, in your opinion, is the *core knowledge* that an occupational therapist should have once he/she has obtained a professional master’s degree in sensory integration?
2. What, in your opinion, are the *core competencies* that an occupational therapist should have once he/she has obtained a professional master’s degree in sensory integration?
3. What do you think is the most important *learning experiences* that should be included in a curriculum for a professional master’s degree in sensory integration?

The decision to have a separate question on knowledge, which is also a competency (Clements, 2007, p. 35), derived from the candidate’s own experience of a continued debate (nationally and internationally) on the knowledge base of therapists working in the field of sensory integration. In designing a curriculum on a master’s degree

level, it was thus important to obtain clarity on the international experts' opinions on 'knowledge' at this level.

4.5.1.3.3 *Process and Analysis*

Four of the five international experts approached agreed to take part in the semi-structured, e-mail interviews, and the three semi-structured questions presented in the previous section were sent to them by e-mail. A two-week time-frame was provided, and two of the four experts responded within the given time-frame. A further two-week time frame was sent to the other two participants and their responses were received within the second time-frame.

As soon as the responses to the questions were received they were converted into a de-identified, coded Word document. This served as the interview transcript and was loaded into a hermeneutic unit that was opened for analysis purposes in the ATLAS.ti™ programme. As already mentioned in 4.2.4, a deductive approach to coding was used as the coding of this research activity was done against the theoretical background of the specific content that was needed (part of the 'what?' of the curriculum) and which specific teaching and learning activities would be of value (part of the 'how?' of the curriculum).

4.5.1.3.4 *Findings*

The interviews recorded the international experts' personalised views, opinions and perceptions on the core competencies a student should attain in becoming a specialist in sensory integration on a master's degree level, and possible teaching and learning experiences to which he/she should be exposed during training.

There was agreement between the four participants on the core competencies needed by a master clinician in the field of sensory integration. Coding was done according to the knowledge, skills and attitudes as they were described in the text of the interviews. The CHE has adopted an outcomes-based approach to learning (Council for Higher Education, SA, 2013, p. 13; Nkomo, 2000, p. 10), giving a clear directive to any curriculum

developer/designer that outcomes should be decided on from the outset. Extractions from the literature relating to curriculum development/design as presented under objective 1.2 guided the candidate to start the curriculum design by identifying the knowledge, skills and attitudes that students would ultimately need to attain (Spady, 1999 In Nkomo, 2000, p. 11). This guided the deductive approach to the data analysis. The knowledge, skills and attitudes identified naturally culminated in the category of competencies; these are presented in Figure 4.3: 1.3.1.1.

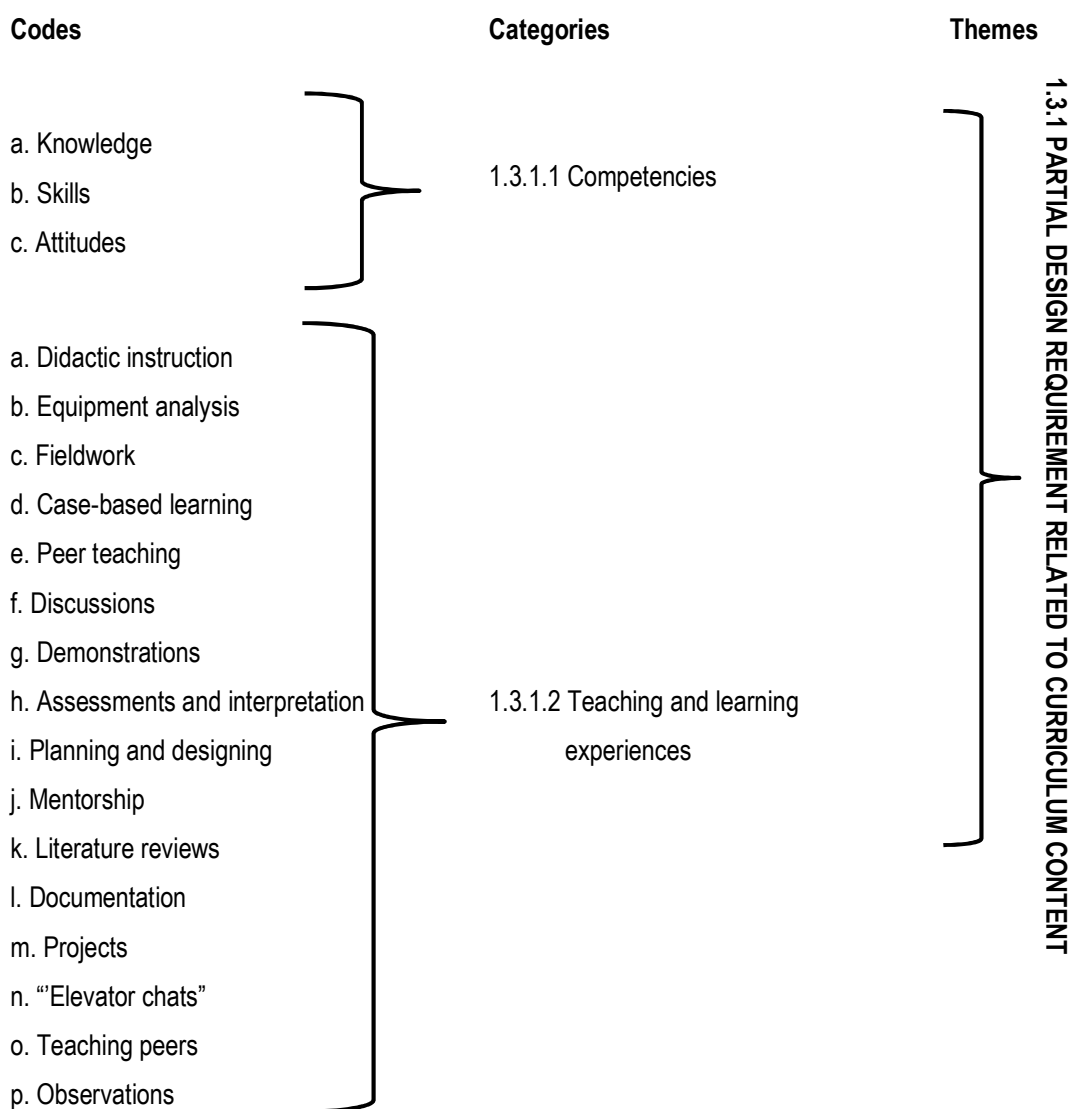


Figure 4.3: Data emerging from Micro-cycle 1, Phase objective 1.3 – Analysis and exploration phase

The candidate realised that the competencies identified by the international experts in sensory integration would not only be core when developing the specific outcomes of the curriculum but would also serve as a “compass” during the design and construction phases of the research. She therefore designed a draft model representing these competencies (Figure 4.4: Draft Model 1 of Competencies (M OT (SI)) to assist in the design process of the curriculum.

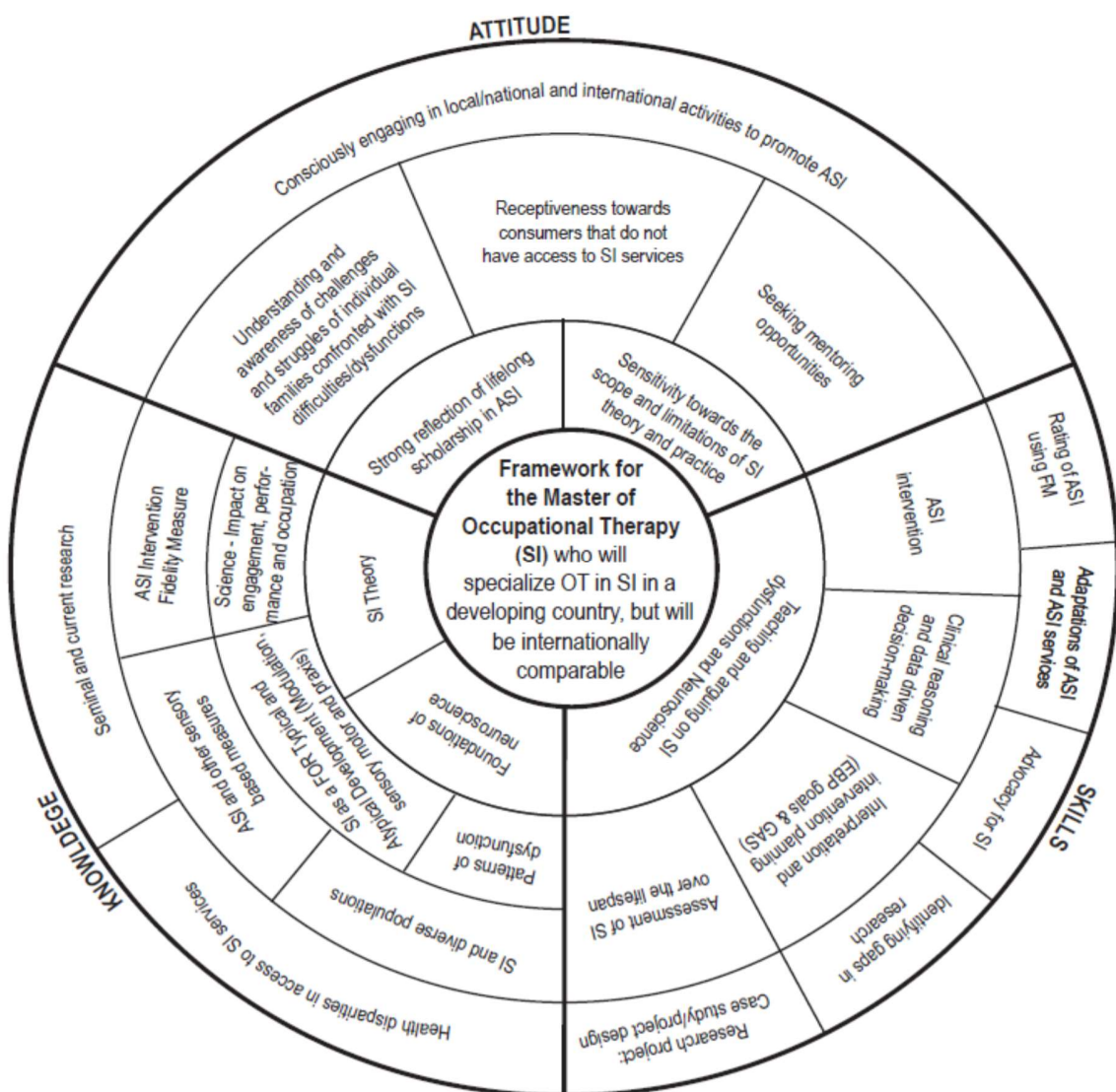


Figure 4.4: Draft Model of Competencies M OT (SI)

The design that evolved followed a natural circular process, with knowledge, skills and attitudes, represented in the model.

Foundational competencies identified by the international experts were placed around the core of the model. Remaining competencies were then positioned in the model, progressively moving outwards (cf. Figure 4.4). In reasoning on the placement of the competencies, the candidate drew on her knowledge of sensory integration training both nationally and internationally, and used the document of the ICEASI (2016) as guidance. Knowledge and experience gained during curricular reform at the Department of Occupational Therapy, University of the Free State (2011-2015) were also applied in the reasoning process. The way the model was designed also allowed for reasoning on progression within the qualification, starting with competencies nearest to the core of the model and progressing outwards, towards the final and outer layer of competencies.

Using her own knowledge base, experience and creativity in the design of the model, the candidate realised that she would have to submit it for opinions as part of the first micro-cycle in a phase of design and construction, ensuring the value thereof.

The second category emerging from the data was teaching and learning experiences (cf. Figure 4.3: 1.3.1.2). Sixteen codes were identified that contributed to this category. The nature of the experiences identified were in line with teaching and learning activities associated with WIL (Council for Higher Education, 2011, p. 13) and deemed important for teaching and learning in health sciences, as discussed in Chapter 2 (cf. 2.6.1.1). Mentoring was emphasised by the international experts, as well as assessment, planning and the designing of intervention. These experiences, together with the other identified teaching and learning activities, were important in the design of the curriculum and are reflected in the intended curriculum (cf. 4.5.3.2.1).

Both the categories of competencies and teaching and learning activities contributed to an initial design requirement related to curriculum content and will be presented in phase objective 1.5.

4.5.1.4 Phase objective 1.4: Draft a first skeleton prototype of the curriculum

Having obtained the theoretical knowledge needed for a practical understanding (McKenney & Reeves, 2013, p. 122) of curriculum and curriculum development/design (Objectives 1.1 and 1.2), together with the core competencies and learning experiences identified by international experts (Objective 1.3), the candidate was able to draft a first skeleton prototype (or design) of the curriculum (McKenney & Reeves, 2013, pp. 122, 123). This first skeleton prototype is presented in Annexure D.

In an effort to “audit” the design process, a table was drawn up with identified core design areas of the end product (intended curriculum), indicating the status of each and the actions needed (cf. Table 4.8: Core design areas of M. OT (SI), design status and actions needed). The table was used as a control mechanism to ensure that all the core areas of the design were addressed. It helped the candidate to make decisions and/or choices on the research activities needed in each subsequent micro-cycle. The core design areas identified through the literature review are presented in Table 4.8.

Table 4.8: Core design areas of M OT (SI), design status and actions needed as identified after completion of phase objective 1.3

Core design areas	Status	Actions needed
Core competencies to be attained	Reflected in Model of Competencies.	Submission to additional expert review activity.
Curriculum and components		
a) Qualification and outcomes	In development using NOF Exit Level 9 level descriptors and competencies identified by international experts.	Finalise and subject to views and opinions of group of experts.
b) Modules	Preliminary modules need to be identified using Model of Competencies.	Identify and subject to views and opinions of group of experts.
c) Module themes	Awaiting.	
d) Module outcomes	Awaiting.	
e) Module specific outcomes	Awaiting.	
f) Teaching and learning activities	Identified by international experts.	In need of another round of identification.
g) Assessment and description	Needs to be identified.	Consider for next data generation activity.
h) Mode of delivery	Needs to be identified.	Consider for next data generation activity.
General information on context and conditions of curriculum	In process of identifying.	Continued identification.

With the curriculum components, core competencies and teaching and learning activities identified, the candidate proceeded with developing preliminary qualification outcomes in which the rest of the curriculum had to be “nested” (Council on Higher Education, SA, 2013, p. 13). Theory (Council on Higher Education, SA, 2013, pp. 5, 38; South African Government, 2007, pp. 11,12; Nkomo, 2000, p. 10; Brüssow, n.d.). In developing these, the candidate drew on her own experience in writing outcomes. The preliminary qualification outcomes are given in Annexure D (First skeleton prototype of the curriculum). The overarching focus of developing the qualification outcomes was to ensure that the qualification was professionally-orientated, geared towards high-level cognitive engagement in order to advance knowledge towards a profession and specialised services (Council on Higher Education, SA, 2013, p. 5).

This meant that the curriculum had to be designed taking into account the specialist field of sensory integration in the profession of occupational therapy. A second pointer from the literature was that the outcomes of the qualification had to be aligned with and reflective of the generic NQF level 9 descriptors of a professional master's degree. The curriculum outcomes were also developed against the backdrop of pointers from authors advocating for contextual understanding and influence of the different dimensions of a curriculum, and these needed to be considered in the curriculum design process (Eisner in McKenney & Reeves, 2012, p. 72; Van den Akker, Gravemeijer, McKenney, & Nieveen, 2006, p. 121). These pointers contributed to an initial design proposition and will be further discussed in phase Objective 5 (4.4.1.5).

Twelve initial qualification outcomes were identified and served as the basis for the curriculum design (cf. Table 4.9). The generic outcomes of the qualification were imbedded in them, and these formed part of the first draft of the curriculum that was submitted for expert opinions (cf. Annexure D).

Table 4.9: Initial qualification outcomes for M OT (SI)

Outcome 1	Produce a specialist occupational therapist in the field of sensory integration (OT-SI) who can contribute to the development of knowledge, attitudes and skills at an advanced level.
Outcome 2	Provide the MOT-SI with an understanding of the breadth of ASI@-related and underpinning knowledge that will equip him/her to deliver specialist services in this field and that will be internationally recognised.
Outcome 3	Equip the MOT-SI with a critical awareness of current challenges and/or new insights in the field of sensory integration to address the complexities of sensory integration services in the South African context.
Outcome 4	Develop a sense of equity, justice and service ethics in the MOT-SI that will ensure accountability irrespective of their work environment.
Outcome 5	Communicate effectively and appropriately on ASI-relevant matters to a range of audiences.
Outcome 6	Promote the importance of mentorship and scholarship within the field of sensory integration.
Outcome 7	Foster a wide range of transferable skills for application in other settings, disciplines and general life. These include: <ul style="list-style-type: none"> – The ability to plan, implement and manage projects – The ability to work independently and as part of a team. The ability to influence policies in terms of change, development and implementation.
Outcome 8	Have a systematic understanding of the breadth of ASI@-related and underpinning knowledge, with a critical awareness of current problems and/or new insights, informed by the forefront of their clinical field / area of professional practice. The areas of professional practice / clinical fields may be helpfully construed around four pillars of research, advocacy, education, and clinical practice.
Outcome 9	Demonstrate conceptual understanding that enables the student to critically evaluate current research, as related to ASI.
Outcome 10	Demonstrate originality in the application of knowledge, together with a practical understanding of how established techniques of research and enquiry are used to create and interpret knowledge.
Outcome 11	Evaluate methodologies, develop critiques of them and identify gaps in terms of research, services, and advocacy
Outcome 12	Communicate effectively and appropriately complex ASI@-relevant material to a range of audiences, dependent on need.

Once the initial qualification outcomes had been developed, possible modules to be included in the curriculum could be identified. From the findings of the interviews with the international experts (phase objective 1.3), the designed Model of Competencies (cf. Figure 4.4), together with the qualification outcomes, the candidate was able to decide on five initial modules (without content) that could be submitted to expert opinions during the research activities of the next micro-cycle as part of the first skeleton curriculum. The reasoning for each module is given in Table 4.10.

Table 4.10: Reasoning on possible modules

Module Name	Reasoning on possible modules
1. Theoretical foundations	It was clear from the results of Objective 1.3 that in-depth knowledge of especially relevant theoretical underpinnings was deemed important by all the international experts.
2. Assessment and intervention over the lifespan	In the opinions of all the international experts (Objective 1.3), assessment and intervention over the lifespan were core skills of a master clinician.
3. ASI® and diverse populations	To deliver sensory integration services to diverse populations was another focus area that emerged from the interviews with the international experts (Objective 1.3).
4. Local and global landscape of sensory integration	SI knowledge and engagement on national and/or international level were identified by two of the four international experts, the literature and document review supported the importance of the consideration of the national (local) landscape (Eisner in McKenney & Reeves, 2012, p. 72; Van den Akker, Gravemeijer, McKenney, & Nieveen, 2006, p. 121). The international landscape is of relevance as the aim of the curriculum is to be internationally acknowledged. The importance of involvement on the international platform was also highlighted in the section on higher education internationally (cf. 2.4.1). In the literature review on occupational therapy and sensory integration (cf. 2.2) mention was made that the leaders in the field of sensory integration are from the United States and that most of the research in the field is also conducted there. It is thus impossible not to include the global landscape.
5. Research project	A research component is a requirement set by the NQF (Council on Higher Education, SA, 2013, p. 38) and is one of the modules. Research competencies were also identified as part of the findings of the international experts' interviews (objective1.3).

The first skeleton prototype of the curriculum consisted of general qualification specifications, the qualification outcomes and identified module names (cf. Annexure D). The candidate purposefully did not include the teaching and learning activities identified by the international experts (phase Objective 1.3) in the skeleton curriculum so as to allow for original ideas and opinions in the next round of data generation. The first prototype of the curriculum was thus ready for submission to idea checking and further expert opinions. Together with the development of the first partial design

requirements and initial design propositions (cf. 4.4.1.5 phase objective 1.5), this concluded the phase of analysis and exploration.

As indicated in Table 4.8, module themes, module outcomes, specific module outcomes, assessment activities and mode of delivery at this stage, still had to be explored and identified or developed. Gathering general information on context and conditions of the curriculum was continued throughout the design process. Learning experiences were identified by the international experts, but the candidate believed that it would be valuable to add another round of opinions on possible activities in the next micro-cycle, as discussed above.

4.5.1.5 *Phase objective 1.5: To formulate initial design requirements and design propositions that emerged during this phase*

The last phase objective of the analysis and exploration phase was to formulate partial design requirements and initial design propositions as they emerged during this phase. Design requirements and design propositions were already presented and discussed in Chapter 2.1, orienting the reader to what they are and to the purpose of the extraction of the literature. In Chapter 3.1 they were discussed in more detail as part of the educational design process, showing not only how they inform the design process but also how they contribute to knowledge emerging from an educational design process.

Design requirements in this study are focused on the 'end product', the intended curriculum, and relate to its functions, how it needs to be 'custom built' for the stakeholders (students, lecturers) and/or context. It provided the candidate with the boundaries ('freedoms and constraints') and opportunities within which she could design and construct the curriculum (McKenney & Reeves, 2013, p. 106).

Design propositions in this study relate to the 'core ideas' that guided the design of the curriculum and helped the candidate in making design choices (McKenney &

Reeves, 2013, pp. 120,122) (cf. Figure 4.5). They informed the “how” and “why” of the design process.

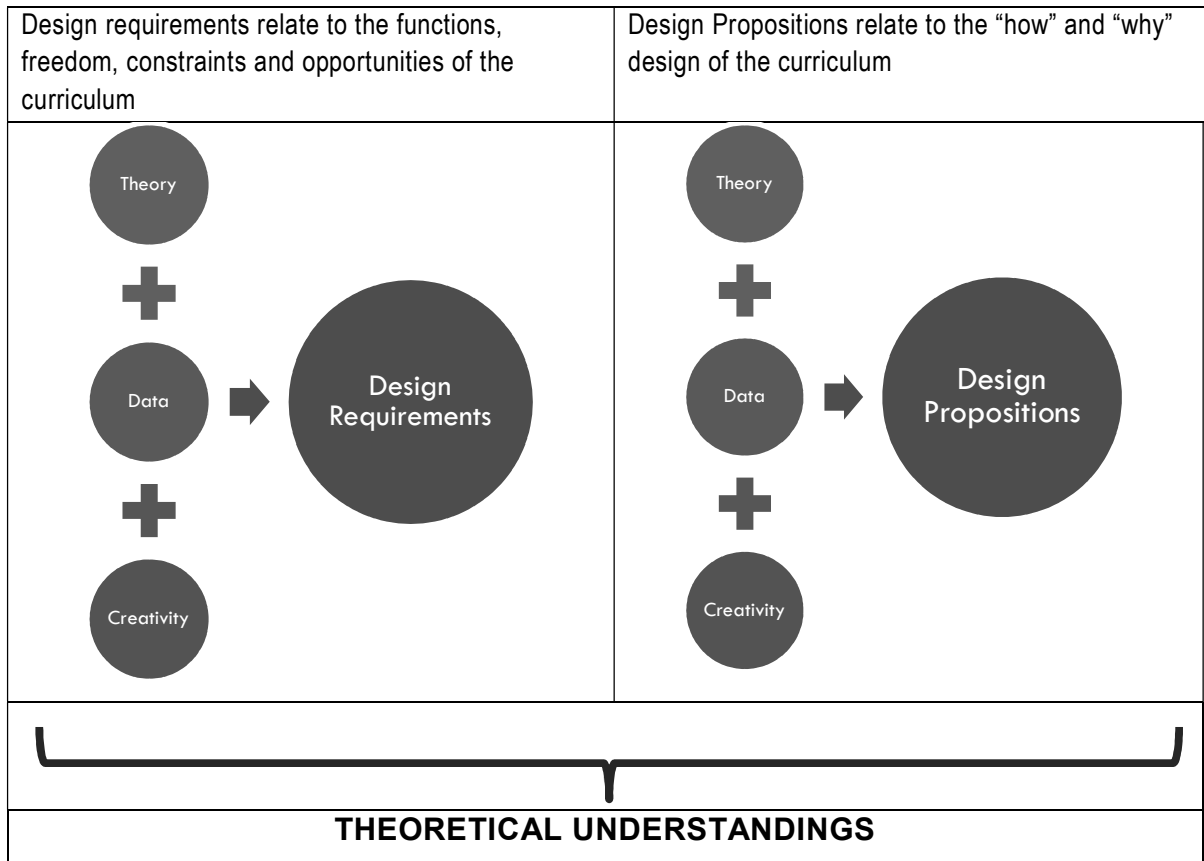


Figure 4.5: Design requirements and design propositions

Design requirements and design propositions, drawing on theory, data and creativity, can inform the design process (Howie, 2016). They provided the theoretical understandings emerging from this research.

The partial design requirements and initial propositions evolving from the analysis and exploration phase of the research and referred to in objectives 1-3 are given in Table 4.11 below.

Table 4.11: Partial design requirements and initial propositions emerging from analysis and exploration phase

Partial design requirement	All qualification and curriculum components must be supported and guided by the relevant statutory documents and literature to provide the structure, limits and requirements of the curriculum.
Initial design proposition	In order to identify competencies needed to become a master professional, international expert should be consulted.

The refinement of the design requirements and proposition will be developed, refined and discussed as the presentation of the research findings progresses.

4.5.1.6 Conclusion of analysis and exploration phase

During the analysis and exploration phase, five phase objectives were formulated:

- 1.1 To establish the core/key components of an effective and internationally acknowledged curriculum in the field of sensory integration.
- 1.2 To use the relevant literature and regulatory frameworks to guide the development of a professional master’s degree in sensory integration.
- 1.3 To explore and identify the key master-level competencies that will inform sensory integration as a field of specialization.
- 1.4 To draft a first skeleton prototype of the curriculum.
- 1.5 To formulate initial design requirements and design propositions that emerged during this phase.

All five of these phase objectives, as discussed in section 4.4.1, were met in the single micro-cycle of activities of this phase, also representing a meso-cycle (cf. Figure 4.1). Micro-cycle 1 produced a first skeleton prototype of the curriculum that was ready to be submitted to a first round of idea-checking and expert views and opinions. The reasoning as to what information was needed to further the design process and which experts were likely to have the relevant information will be discussed in the next section (4.4.2).

An international development occurred during the planning of this phase of the research process. This was the formulation of the ICEASI's overall pathway of training in ASI® at a meeting in London (ICEASI, 2016). Four different levels were identified. Level 1 involves acquiring basic knowledge on sensory integration, with no formal assessment involved. Level 2 is equivalent to a postgraduate diploma level, with evidence of theoretical, assessment and intervention knowledge and skills and the ability to communicate on ASI® assessment results and their implications for function (advanced ASI® practitioner level). Level 3 would be equivalent to a master's level, calling for expertise in one or more areas of research, advocacy, education, and practice; contributing to new knowledge and skills in ASI®, involvement in the sharing of knowledge and continued scholarship and emerging leadership in the field (a specialist in ASI®). Level 4 would be experts with outstanding knowledge and skills who were internationally acknowledged for their contributions in the field of ASI® (a fellow in ASI) (ICEASI, 2016). A new publication, based on the understanding and agreement of international training and providing guidelines for building competencies in ASI® in occupational therapy, has been included in 'OT Practice', a publication of the American Association for Occupational Therapy (Baltazar Mori, et al., 2017).

The candidate believed that she needed to obtain knowledge from South African occupational therapists who had completed their ASI® training through SAISI, feeling that their perceived levels of competencies could help her in the further design of the curriculum and in aligning it with the newly-set international levels. She also argued that the opinions of the local occupational therapists on the teaching and learning activities that had contributed to their competencies in ASI® could offer her guidance on the type of activities which could be included in the design of the curriculum. The phase objective formulated from this and additional needs will be discussed in 4.5.2.

Three definite questions concluded this phase of the research. Firstly, to whose expert opinions should the first skeleton draft of the curriculum be submitted? Secondly, which additional teaching and learning activities could be included in the

curriculum? Thirdly, what were the views and opinions of SAISI-trained occupational therapists on their perceived levels of competencies and learning gained during training, in their journey to become advanced practitioners in the field of ASI®? The objectives formulated from these questions will be discussed in the next section, introducing the phase of design and construction of the research process.

4.5.2 Design and Construction Phase

The design and construction phase of the research was a rigorous and iterative process of data generation, data analysis, design, consulting theory, and construction aimed at ensuring the practicality and effectiveness of the curriculum (Plomp, 2013, p. 19; McKenney & Reeves, 2012, pp. 13, 77, 78, 79; Van den Akker, Gravemeijer, McKenney, & Nieveen, 2006, p. 4). In this phase, the candidate communicated and engaged with a variety of experts and stakeholders who actively contributed to the curriculum (Thijs & van den Akker, 2009, p. 17). For the candidate, this was a rewarding phase as she experienced at first-hand how the curriculum evolved. It was an exciting process of engaging (collecting data), analysing, consulting over the theory, coming up with answers, designing with the “data”, but also drawing on her own creativity – and constructing... then more questions...and another cycle...

The overall aim of this phase was to submit the skeleton prototype, drafted during the analysis and exploration phase, and submit it to repeated activities that would further the design and construction until a final intended curriculum was designed.

4.5.2.1 Design and Construction Phase: Micro Cycle 1

The aim of the first micro-cycle in this phase (cf. Figure 4.1) was to expand and refine the curriculum, in the process of designing, arriving at Prototype 2. Three phase objectives were determined for the first micro-cycle of the design and construction phase and are presented in Table 4.12. The first two objectives were newly formulated and emerged from the previous micro-cycle. The third objective evolved from objective 1.5 (cf. 4.5.1.5); this was an ongoing and continually evolving objective

supporting overarching objective 5 of the research, that of developing design requirements and design proposals which would generate knowledge for future use (cf. 3.5).

Table 4.12: Aim, objectives, activities and resources for the design and construction phase - micro-cycle 1

2. Design and Construction Phase: Micro Cycle 1			
Aim of the phase: To expand and refine the curriculum to arrive at Prototype 2 in the process of arriving at an intended effective and internationally acknowledged curriculum			
Phase objectives	Activities	Sources	
2.1 To submit the skeleton prototype of the curriculum to the views and opinions of South African experts in ASI® holding academic posts at universities and who are also lecturing for SAISI on their ASI® training courses.	a) Identify and obtain permission from all possible participants for participation in the research. b) Arrange a suitable date and time for a Skype meeting. c) Arrange with Information and Technology Communication Services of the university to set up the interview	All SAISI lecturers in full academic posts at South African universities who are also lecturing for SAISI on their ASI® training courses	2.3 To further formulate design propositions that evolve & emerge during this phase
2.2 To obtain the opinions of SAISI-trained occupational therapists on their levels of competencies, satisfaction and valuable learning experiences gained through the SAISI training courses as well as information on the use of the SIPT and other sensory integration related tests.	a) Obtain permission from SAISI to contact all their members available in their data bank who had successfully completed their sensory integration training between 2008 and 2015. There were, more or less 400 occupational therapists at that stage that adhered to this criterion. b) Compile a questionnaire and send out an invitation to participate electronically.	Occupational therapy clinicians who have completed their ASI® training through SAISI between 2008-2015	

Objective 2.1 was addressed in one data-generating activity, and will now be discussed.

4.5.2.1.1 Phase objective 2.1: To submit the skeleton prototype of the curriculum to views and opinions of South African experts in ASI® holding academic posts at universities and who are also lecturing for SAISI

Once the first draft of the curriculum had been designed, the candidate argued that the input needed at that stage would be from individuals who were knowledgeable on the South African context of higher education and ASI® training. At this point, only a skeleton

draft of the curriculum was on the table. To obtain information on the realities in the South African context that could impact on ASI® training, expand on outcomes, possible teaching and learning activities, as well as possible assessment activities, the candidate needed very specific individuals to contribute to the research process. The population able to provide this expert input was comprised of South African experts in ASI® holding academic posts at universities who also lectured on SAISI training courses.

4.5.2.1.1.1 Data sources

International experts in ASI® were identified with the assistance of an international leader and educator in the field of ASI®. The criteria applied were that these experts should be acknowledged first-generation scholars of Jean Ayres and involved in training on ASI®. In determining who would 'fit' the criteria of 'South African experts' able to make valuable contributions to the design of the curriculum, the candidate decided firstly to use the criteria of occupational therapists lecturing on SAISI training courses, as they are seen as the current experts in South Africa. Secondly, these occupational therapists had to hold full-time academic posts at universities. The reasoning was that they would be knowledgeable not only on the outcomes, content and delivery of SAISI training courses but would also be familiar with the South African context of higher education and curriculum development. Three individuals met all the criteria, and were approached for participation.

4.5.2.1.1.2 Research activity and method of data generation

The three identified individuals were approached by e-mail to take part in a Skype interview. The literature on the use of Skype to conduct interviews for qualitative data generation highlights the advantages of this approach. The main attraction, noted by Deakin and Wakefield (2013) and quoted in Lo Iacono, Symonds and Brown (2016, p. 7), is that "the place of the interview becomes much more fluid". Logistical arrangements are minimised and financial implications are minimal. The three participants were all familiar with Skype and had access to it. They were invited to take part in an hour-long interview, of expert checking and opinion and discussion of

ideas. The Skype interview thus obtained the views and opinions of all three of the South African experts in ASI® (i.e. holding academic posts at universities and also lecturing on SAISI training courses) at the same time.

The participants were informed of the agenda. They would receive a letter by e-mail containing details of the research and the expectations (cf. Annexure E), the initial Model of Competencies (cf. Figure 4.4) were also provided to them in as a single page document, together with the skeleton of the curriculum containing the overarching outcomes and possible modules (cf. Annexure D) as well as discussion points and questions that would guide the interview (cf. Annexure F). Willingness to participate was indicated on the information letter as informed consent.

All three agreed to take part. A date and time were set for the Skype interview and an e-mail containing all the relevant documents was sent to them. Arrangements were also made with the occupational therapy colleague who was a co-coder for this research. She agreed to take field notes during the interview. The interview was arranged to be held at a suitable venue, that of the Clinical Skills Unit of the School for Allied Health Professions at the Faculty of Health Sciences at the University of the Free State. The Information and Technology Communication Services of the university helped to set up the interview and were on standby during the session. These measures ensured a technologically smooth flow of the interview. Data generation was done according to the process discussed in 4.3.2 and no adaptations were needed.

Given the subject-specific and academic nature of the questions, the candidate interviewed the participants herself, with the co-coder taking field notes. The questions for this session focused on comments/feedback on the composition of the curriculum thus far, the levels of organization as seen in the Model of Competencies, the outcomes that were set at that stage, and the identified modules. The participants were also asked to comment on the extent to which they thought the curriculum addressed the realities in the South African context. Possible learning experiences,

research project/activities and assessment methods were also listed as questions and discussion points (cf. Annexure F). The final question was on the possibility of using the Model of Competencies as a tool for monitoring progress.

The session went according to plan and was concluded within an hour.

4.5.2.1.1.3 Data Management and Analysis

The management and analysis of the data obtained in the Skype interview were done as described in 4.2.3. (Data Management) and 4.2.4 (Data Analysis).

4.5.2.1.1.4 Findings

All three participants were white females and proficient in English, the language in which the interview was conducted. This opportunity for engagement and discussion resulted in rich and valuable data.

The discussions during the interview followed the framework of points and questions sent prior to the interview (cf. Annexure F) and were based on a theoretical exploration of what information would be needed to progress with the design of the curriculum (Friese, 2014, p. 14; Delport & De Vos, 2011, p. 48). The candidate therefore once again used a deductive approach to coding. The possibility of identifying codes which might culminate in new and unexpected categories was kept in mind at all times.

Figure 4.6 gives a summary of the codes and categories that contributed to emerging design propositions and design requirements. It also serves as contextual orientation for the reader relating to the results of this data-generation activity.

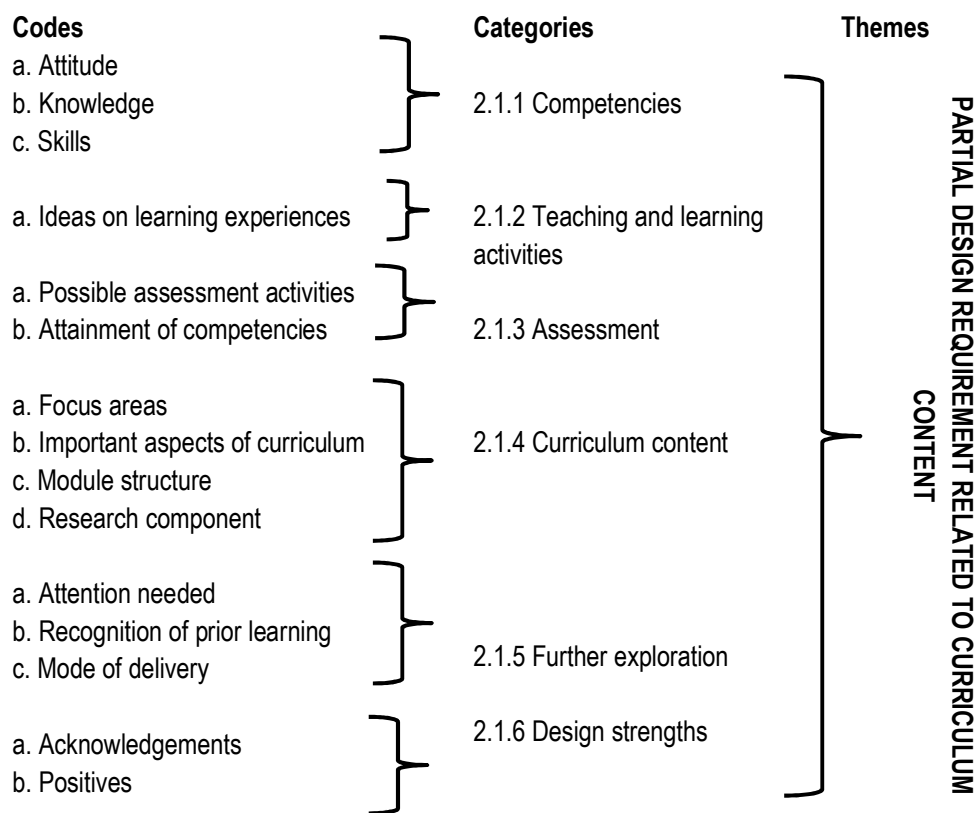


Figure 4.6: Data emerging from Micro-cycle 1, Phase objective 2.1 – Design and construction phase

The two categories that emerged in micro-cycle 1 (Phase objective 1.3 and discussed in 4.5.1.3.4) of the research, those of ‘Competencies’ and ‘Teaching and Learning Experiences’, were further explored and added to. Four new categories emerged from this round of data generation (cf. Figure 4.6), and these will be discussed first.

4.5.2.1.1.4.1 Category of competencies

All three participants agreed on the importance of the competencies already identified by the international experts in ASI® and presented in the findings of phase objective 1.3 of Micro-cycle 1 of the analysis and exploration phase (cf. 4.5.1.3.4.). Three codes, (a) knowledge, (b) skills and (c) attitudes, constituted the category ‘competencies’ (Figure 4.6: 2.2.1), a category already identified in the first micro-cycle of the research. The identified knowledge codes confirmed the importance of

knowledge on the foundations of neuro-science, on sensory integration over the lifespan, and on sensory integration for diverse populations. The realities of the South African context and its impact on sensory integration and occupation were central to these discussions.

The quotations supporting the 'skill' code were in agreement with the skills already identified by the international experts. During the discussion of the skills the realities of the South African context and its impact on sensory integration and occupation were once again central. The same was true for the code of 'attitudes'. However, a new competency related to attitudes emerged, that of 'service ethics of appropriateness, equity and justice'. The realities of the South African context contributed to the formulation of this attitude. The participants felt that delivering ASI® services in environments that were diverse and challenging could pose ethical dilemmas, especially in terms of the 'how' of the services delivered. It would be straightforward to deliver services which adhered to the criteria of sensory-motor stimulation and ignore the problem of delivering sensory integration services in challenging environments while remaining as true as possible to the Fidelity Measure of ASI® (Parham, et al., 2011). It was therefore decided to add this new attitude to the Model of Competencies.

4.5.2.1.1.4.2 Category of teaching and learning activities

Although the international experts identified important learning experiences that should form part of the master clinician's training, the candidate also stated in the conclusion of the analysis and exploration phase (cf. 4.5.1.6) that she would be interested in obtaining the views of South African experts in sensory integration education on possible teaching and learning activities. The code of 'Ideas on teaching experiences' (a) was the only one that contributed to the category of 'Teaching and learning activities' (2.1.2) (Coding was thus done to identify "what" possible teaching and learning activities could be included in the curriculum and are provided in Table 4.13.

Table 4.13: Possible teaching and learning activities identified

Teaching and learning activities		Examples of the “how” of activities
1	Self-study	Can be used to consolidate/obtain relevant theoretical underpinnings.
2	On-line assignments	Can be applied for obtaining/demonstrating knowledge, preparing for presentations, conveying students’ understanding of topics.
3	Choice assignments	Can be applied especially on diverse populations and diverse service delivery contexts, allowing for focus on specific fields of speciality.
4	Work-related	By providing for learning opportunities that are directly related to a student’s current work environment.
5	Video-related activities	Can be used to observe experts doing assessments/intervention, students can video themselves as part of a critical reflection, or it can be used for peer discussions, all aimed at development of knowledge and skills.
6	Case work/presentations	Each student can be tasked with a specified number and types of cases that they can use as core cases during the qualification process to attain the identified competencies.
7	Discussion boards/forums	Can be used to build competencies of advocacy and reasoning.
8	Reflective blogs	Knowledge and insight into own skills can be attained. It can also contribute to further understandings of ongoing debates/issues in the field of ASI®
9	Observations	Observations of experts and peers can contribute to knowledge, skills and attitudes in terms of assessment and intervention.
10	Demonstrations	Demonstrating of own competencies especially in terms of assessment and intervention can lead to building of self-confidence and consolidation of competencies.
11	Mentoring	Being mentored by a specialist in the field of ASI® on a regular basis was seen as a core teaching and learning experience in becoming a specialist in the field. The opportunity to become a mentor can also contribute to attaining competencies of communicating on sensory integration, deepening own knowledge base, advocacy, transfer of knowledge, remaining conscious of the latest research and discussion of controversial issues.
12	Work-integrated activities	Attaining skills whilst working is ideally suited to the field of ASI® as all the skills identified can be directly integrated into work-integrated activities.
13	Portfolios	All work-related and work-integrated activities can be integrated into the student’s portfolio and can also serve as a progress monitoring tool.

The activities identified (cf. Table 4.13) do provide opportunities for active engagement of students, deep learning, reflection and taking responsibility for their

own learning process. These are all characteristics of the philosophical orientation of constructivism and how students can expand on existing knowledge and construct new knowledge on the basis of what they already know. (Biggs & Tang, 2007, p. 21). The inclusion of work-integrated activities will allow for the building of competencies in delivering services in the realities of the South African context.

Data were also generated on the “how” of some of the activities. Possibilities in the “how” of the types of teaching and learning activities, relevant to current South African higher education context and applicable to training in ASI®, were also generated during the session, and examples of these possibilities are also given in Table 4.13. The use of videos as part of teaching and learning activities was extensively discussed, given the opportunities it offers to observe experts in action and videoing of own competencies for reflection and discussions. These could take place between student and mentor, student and peers, or student and lecturer. Video not only provides opportunities for face-to-face contact but also, equally importantly, allows for distance learning, minimising on campus time.

Discussion on the “how” of mentoring as a teaching and learning activity/experience generated valuable opinions and views and confirmed the international experts’ strong support of its role in the training of master clinicians in ASI®. The importance and value of being mentored was affirmed by the data. A point that was additionally raised was the possibility of giving students opportunities to mentor occupational therapists who had only just started working in the field of ASI®. Such an experience could be valuable to the student in becoming a specialist in the field.

The data generated, together with the experiences highlighted by the experts, were included in the further design and construction of the teaching and learning activities of curriculum and were aligned with the guidelines provided by CHE, as discussed in 2.6. (Curriculum and curriculum development), and the Teaching-learning policy of the University of the Free State (2008).

4.5.2.1.1.4.3 Category of assessment

Two codes, 'Possible assessment activities' (a) and 'Attainment of competencies' (b), contributed to the category of 'Assessment' (Figure 4.6:2.1.2). The importance of assessment in a curriculum was already noted and discussed in Chapter 2 (2.4.2.1 & 2.6.1). Assessment was also established as a category, emerging from the empirical data during this activity.

Assessment ensures that "learning ultimately happens..." (Spady (1994) in Nkomo, 2000, p. 11). At the same time, it is also "one of the most controversial issues in higher education." (Norton, 2009, p. 132). These aspects alerted the candidate to the gravity of assessment in the design process. The assessment activities had to be carefully planned to ensure that the expected competencies set in the outcomes would be demonstrated by students (Nkomo, 2000, p. 21).

The candidate allowed herself to be guided by the 'Criteria and Guidelines for Assessment of NQF Registered Unit standards and Qualification' (2001), the assessment policy of the University of the Free State (University of the Free State, n.d.) and other relevant literature as referenced in the text.

Assessment activities (the "what") that were identified in the interview are presented in Table 4.14. Five definite assessment activities surfaced during the interview, but were by no means the only assessment activities.

Table 4.14: Possible assessment activities identified

Assessment activities		Examples of the “how” of activities
1	Video assessments	Videos can be made of specified work-integrated activities that need to be submitted for assessment. This can include peer and lecturer assessment.
2	Assessments of on-line activities	On-line activities can be identified for assessment purposes (e.g. participation in discussion boards).
3	Assessment of cases and case presentations	Specific components of cases can be identified for assessment purposes and students’ presentation of cases could also be identified for assessment.
4	Assessment of assignments	Can include on-line and hard copy assignments or projects.
5	Assessment of portfolios	Portfolios as they relate to specific modules can be assessed.

Both in reviewing the literature and extracting data contributing to design requirements and design propositions, the importance of formative and summative assessments (Council for Higher Education, 2011, pp. 42, 43) was discussed, and the role of assessment in enhancing learning was already highlighted (cf. 2.4.2.1. & 2.6). With the data (theoretical and empirical) available, the candidate decided to design the curriculum using continuous assessment. In this, a series of assessments is carried out during, instead of after the learning process. Students are thus examined continuously for the duration of a quarter, semester or year. It is cumulative and the marks are calculated to give a final result (Council for Higher Education, 2011, p. 43). The decision in favour of continuous assessment was supported by the already identified teaching and learning activities, most of which could contribute not only to the attainment of competencies but also to continuous assessment. The argument that assessment should, in the words of Norton (2009, p. 132), be “for learning” and not assessment “of learning” also confirmed the candidate’s decision.

Once again, a discussion on the “how” of assessment activities evolved organically, and examples are presented in Table 4.14. In particular, the use of videos in assessment was considered favourably by the participants as it allows for the non-threatening/invasive capture of real-life situations. It also permits assessment at a convenient time and can be

used productively in formative assessment and discussions. All three participants agreed that video was a valuable tool for teaching and learning, as well as for assessment.

Data also indicated that participants were in overwhelming agreement of the following:

- Assess the application of information, rather than its retention.
- Take a non-exam type approach, relying on continuous assessment.
- Use portfolios for continuous assessment purposes.

Data generated were used in the design and construction of the assessment activities identified at this stage and included in the outcomes of Prototype 2 of the curriculum. They were aligned with the guidelines provided by the CHE, as discussed in 2.4.2.1 (The Council on Higher Education, National Qualification Framework, and the South African Qualification Authority) and 2.6. (Curriculum and curriculum development), as well as with the teaching-learning policy of the University of the Free State (2008).

4.5.2.1.1.4.4 Category of curriculum content

The category of 'curriculum content' (Figure 4.6: 2.1.3) emerged from the codes identified as 'focus areas' (a), 'important aspects of the curriculum' (b), 'module structure' (c), and 'research component' (d). The data captured by these four codes provided valuable information contributing to confirmation of the already identified modules of 'Theoretical Foundations', 'Assessment and Intervention over the Lifespan' and the 'Research' module included in Prototype 1 of the curriculum (cf. Annexure D). The data also supported the design of the content of the modules as presented in the second prototype of the curriculum (cf. Annexure G). Data from this category strongly reinforced the importance of the South African context and its realities. It was therefore decided to change the 'Local and Global Landscape of SI' module to 'ASI® and the South African Context' and to include the global context of ASI® in the reformulated module of 'Lifespan Assessment and Intervention'. The data supporting the code of 'research component' offered rich possibilities for the

'Research Project' module, and the content of this module could be designed using the above data (cf. Annexure G: Prototype 2 of the curriculum).

The data contributing to the code of 'model structure' assisted the candidate in refining the Model of Competencies, which is presented in Figure 4.7. The data generated during this activity strongly suggested that the science of occupation, including the 'person', 'environment' and 'occupation', needed to be central in the model, directly 'embracing' it in the South African context. The changes made in terms of this to the model are also supported by the literature, with studies showing that an in-depth understanding of individuals and their families is necessary. This includes the influence of sensory integration on the person, his/her occupations and the role of the environment (Smith Roley, 2006 (b), pp. 1-4). Understanding and knowing the complexities of the South African context in the delivery of services was also strongly reinforced in the outcomes prescribed for NQF Level Nine Descriptors of the South African National Qualifications Framework (South African Qualifications Authority, 2012, pp. 11,12), as presented in 2.4.2.1.1 (NQF Level Nine Descriptors). The data suggesting the need for a stronger emphasis on the South African context also supported the addition of an 'attitude' competency of 'service ethics of appropriateness, equity and justice', which was therefore added to the model (cf. Figure 4.7: Second version of Model of Competencies).

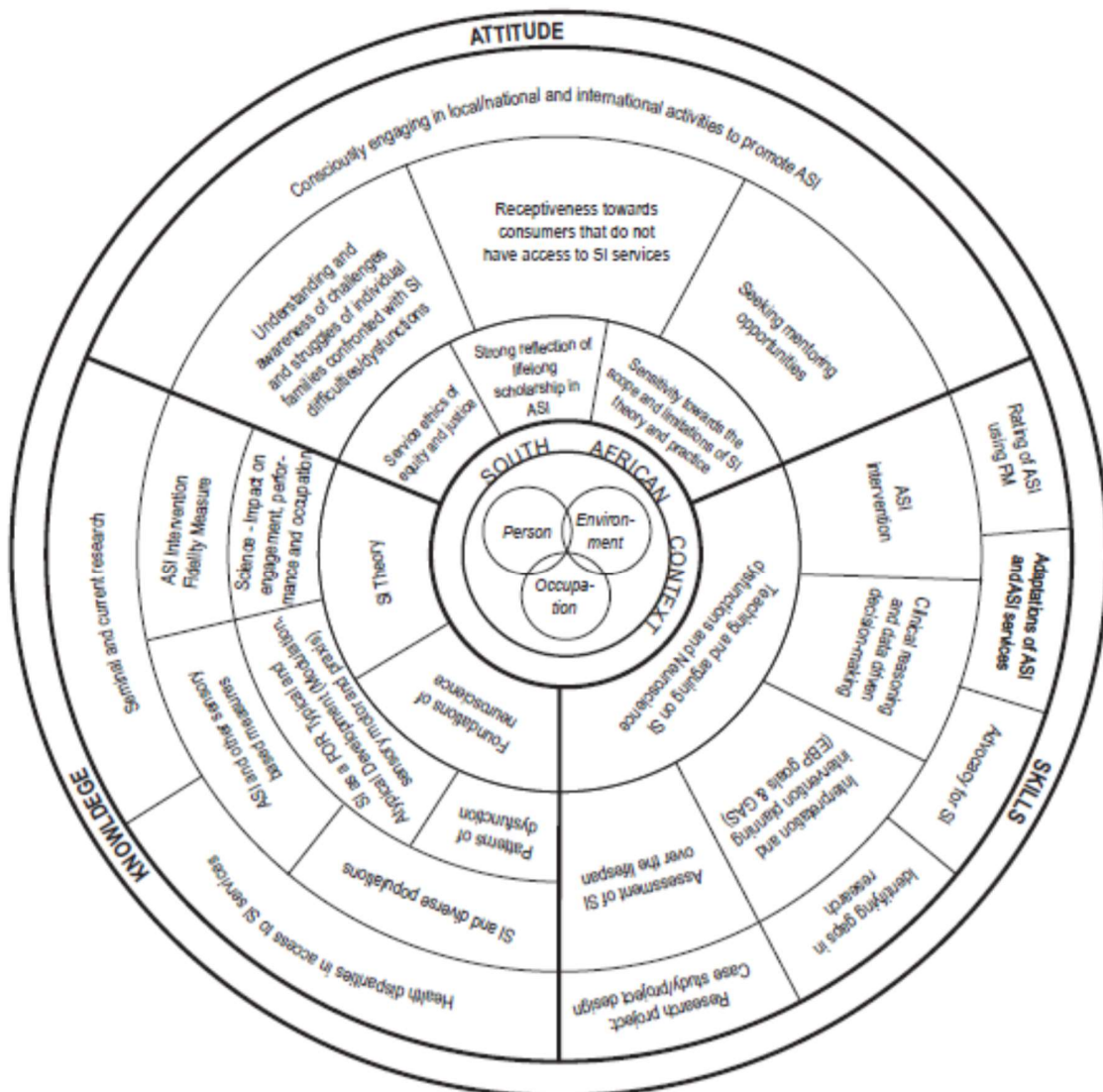


Figure 4.7: Second version of Model of Competencies

Once the changes had been made to the Model of Competencies, the candidate could continue with the development of the curriculum modules and their outcomes.

4.5.2.1.1.4.5 Category of further exploration

The category of 'further exploration' (Figure 4.6: 2.1.5) was unexpected but nevertheless very valuable. Three codes, 'Attention needed' (a), 'Recognition of prior learning' (b) and 'Mode of delivery' contributed to this category. It was clear that more information was

needed on the realities in which OT-SI services are delivered, especially in diverse settings, and the code of 'Attention needed' filled this knowledge gap. Word-of-mouth sources existed on some of the realities that were faced in delivering OT-SI services in diverse contexts/environments, but to the best of the candidate's knowledge no formal data existed on the South African context that could offer guidance on what should be addressed in the design of the curriculum.

A second aspect that emerged and that warranted further exploration was 'recognition of prior learning' (RPL) (b). This was touched on during the literature review in Chapter 2 (2.4.3: The revised Higher Education Qualifications Sub-Framework). The CHE recognises prior learning for those entering programmes (Council on Higher Education, SA, 2013, p. 22), and during the interview the reality of SAISI training as it already addressed some of the identified outcomes emerged again and was touched on in the conclusion of the analysis and exploration phase (cf. 4.5.1.6). It was also stated in the section reviewing the revised HEQSF (2.4.3) that were RPL to become relevant it would be addressed in the curriculum.

The code of 'Mode of delivery'(c) constituted the third code in the category 'Further exploration' (Fig 4.6: 2.1.5). The candidate wanted to obtain more data on possible modes of delivery. At the time of her research, Ulster University in the United Kingdom was the only university that offered a Master's degree purely focused on Sensory Integration (<https://www.findamasters.com/masters-degrees/course/sensory-integration-pg-cert-pg-dip-msc/?i364d5370c43703>). This degree is offered on a part-time basis using a blended learning approach. Ulster University advertised that from September 2017 they would also offer a 100% online master's degree in sensory integration (<https://www.sensoryintegration.org.uk/page-18666>). The candidate was thus interested in obtaining the opinion of clinicians on the delivery modes of curriculums.

4.5.2.1.1.4.6 Category of design strengths

The category of 'Design strengths' (Figure 4.6: 2.1.6) was also an unexpected category, providing data on the strengths of the design up to that stage. Two codes,

'Acknowledgements' (a) and 'Positives' (b) contributed to this category. This was not only a source of motivation for the candidate but also a confirmation of the value of using educational design research as a methodology to answer the research question. The quotations in Table 4.15 are presented verbatim, as any rephrasing would sacrifice the richness of the participant's voice (Salp. 74).

Table 4.15: Verbatim quotations on the strengths of the design of the curriculum

Participant	Verbatim quotation	Area of strength
P1	<i>"Like the fact that accommodation is made for poverty and low resourced communities".</i>	Curriculum content and contribution of curriculum to society.
P2	<i>"Curriculum will support continuous knowledge creation for developing countries".</i>	Contribution of curriculum to society.
P1	<i>"I love the circle....it is continuous, contained and holistic".</i>	Model of competencies of curriculum.
P2	<i>"Appreciate how knowledge skill and attitudes, from the data seems to 'take hands'.</i>	Model of competencies of curriculum.
P3	<i>"Solid outcomes!"</i>	Curriculum outcomes.
P1	<i>"So, I be very keen to do another master, post PhD, and get that done but I would be very keen to do this for sure. So that's very exciting".</i>	Availability of curriculum.
P3	<i>"This is just very exciting, can't wait to see".</i>	Availability of curriculum.

The verbatim quotations highlighted both the importance of making such a curriculum available and the contribution that it could make to society. The Model of Competencies received approval, as well as the outcomes aspects of the content as they were related to the South African context.

4.5.2.1.1.5 Conclusion of objective 2.1

The interview with the South African experts in ASI® holding academic posts at universities who were also lecturing for SAISI not only gave the candidate data that contributed to the further refinement of the Model of Competencies (as displayed in Figure 4.7) and the further design and construction of the curriculum, but also revealed the need for additional data on the realities of delivering OT-SI services in diverse environments and that of RPL.

The category of the design strengths not only confirmed the importance of the research but was also motivational for the candidate.

4.5.2.1.2 Phase objective 2.2: Obtain the opinions of SAISI trained occupational therapists

In meeting the objective of obtaining the opinions of SAISI-trained occupational therapists on their perceived levels of competency, their satisfaction, their learning experiences on the SAISI training courses and their areas of practice/service delivery, along with information on the use of the Sensory Integration and Praxis Tests (SIPT) and other SI-related tests, the candidate chose to use a quantitative approach to data collection.

4.5.2.1.2.1 Background to phase objective 2.2

The candidate knew that a data base was available from SAISI on just under 400 occupational therapists who had successfully completed the SAISI training courses since 2008. Potentially, this group could become users of the proposed curriculum. Obtaining the relevant information from them would secure valuable numeric data from which to draw quantitative conclusions (Creswell, 2009, p. 12) and which, based on the results, could contribute to further curriculum design decisions.

The candidate's interest in obtaining numeric data originated with her involvement in international training and organisational platforms. SAISI's training was setting more advanced expectations, compared to the general international training platforms, and the candidate wanted to know on what level of competency successful candidates perceived themselves. An example of the advanced expectations of SAISI is that recognition of training is based not only on attendance but on definite assessment activities which are included in the training. Successful completion of these activities is required before the student can progress through the four training courses (South African Institute for Sensory Integration, 2014). Although the four courses presented by SAISI ((1) Theory, (2) Assessment, (3) Interpretation and (4) Intervention in ASI®)

were in theory equal to a postgraduate diploma level, according to the levels established by ICEASI (2016) some of the teaching and learning activities, as well as assessment activities included in the training, are aimed at more advanced levels of competencies. The second reason why the candidate wanted to know about the perceived levels of competencies and satisfaction levels was that occupational therapists trained through SAISI might also in the future be users of the projected curriculum and it could be beneficial to obtain a 'profile' of its future users.

The international experts identified theoretical knowledge, assessments skills, interpretation knowledge and treatment knowledge and skills as important competencies in phase objective 1.4 (4.4.1.3) and these were therefore included in the draft Model of Competencies (cf. Figure 4.4). This suggested further research on the occupational therapists' perceived levels of competencies and satisfaction levels after each of the four already mentioned courses. Questions were posed on teaching and learning activities that had supported them in their training, as the candidate argued that this would guide her on which type of activities to consider for the master's curriculum.

One of the major challenges in this research was to design a curriculum which would be contextually relevant. The context includes the individuals to whom the services are delivered. Information was therefore needed on areas of practice and service delivery, and this group could provide valuable information that would serve as support for diverse contexts in service delivery.

The importance of assessment in ASI® on a master's level was emphasised in the findings of the international experts. There is an ongoing debate on the time and cost efficiency of the use of the SIPT (Ayres, 2004), viewed as the 'gold standard assessment' instrument in the field of sensory integration (Smith Roley & Schaaf, 2006, p. 25). The candidate wanted to obtain information on the use of the SIPT by occupational therapists in South Africa. Information was additionally needed on any other assessment instruments they used to inform them on the sensory integration

abilities of individuals, as this was relevant to the teaching and learning activities considered for the curriculum.

The opportunity was also used to obtain information on their interest in further qualification opportunities in the field of ASI[®], should these become available. The candidate argued that it would be a valuable opportunity to confirm quantitatively the need for further postgraduate opportunities in the field of ASI[®].

A quantitative descriptive design was used to record the opinions of SAISI-trained occupational therapists on their perceived levels of competencies, valuable learning experiences gained through the SAISI training courses, additional needs in terms of possible competencies, and information on the use of the SIPT and other sensory integration-related tests. Descriptive studies aim at recording specific characteristics or tendencies about a group of individuals under study (Leedy & Ormrod, 2010, p. 182). The candidate wanted to obtain very specific information from specific individuals. In describing the opinions of SAISI-trained occupational therapists, she aimed for insights on the levels of competencies that candidates entering a professional master's degree would have, identifying possible learning areas which should be addressed in the design of the curriculum (Polgar & Thomas, 2008, p. 19). The data could also provide her with a profile of possible future users of a M OT (SI) curriculum.

4.5.2.1.2.2 *Research population*

In order to “maximise the generalisability” of the results, the entire “population” who had completed their SASI training through SAISI and who were available on the SAISI data base were approached for participation (Polgar & Thomas, 2008, p. 32; Strydom, 2011(a), p. 223). The main criterium for inclusion as it applied to this population was the successful completion of the four SAISI training courses presented since 2008. SAISI changed the content of its courses dramatically in 2008 so as to adhere to international standards, and the first candidates of the ‘new’ courses completed their training in that year.

The Executive Committee of SAISI of 2014 was approached in writing for permission to access their data base (cf. Annexure H). Permission was given with the proviso that the e-mail containing the information letter on the research and the link to the electronic questionnaire would be sent out by the office of SAISI. Thus, the candidate did not have direct access to the participants.

4.5.2.1.2.3 Measurement

A fit-for-purpose questionnaire was compiled by the candidate with the aim of obtaining usable, reliable and valid data (Leedy & Ormrod, 2010, pp. 91-93). The questions were structured according to the type of information the candidate hoped to obtain (Moule & Hek, 2011, p. 111). Closed as well as open-ended questions were included (cf. Annexure I).

In the design of the questionnaire the researcher applied principles of clarity, drawing interest, value adding and importance (Burgess, 2001, p. 5). It was adapted for electronic distribution, using EvaSys, an electronic evaluation system (Electric Paper Evaluationssystem GmbH, 2013). The questions were first developed in Microsoft Excel (cf. Annexure I), then transferred onto an EvaSys questionnaire. In designing the questions, the candidate used her own knowledge of the four SAISI courses, since it was important for the further development of the curriculum to obtain specific knowledge. The questionnaire (cf. Annexure I) was structured firstly to obtain demographic information on the participants. The second part obtained information on their perceived levels of competencies and their levels of satisfaction related to the competencies attained. Open-ended questions were asked on additional competencies which they either had or had not achieved during the completion of the courses. Questions were also asked on valuable teaching and learning activities that might be considered for inclusion in the master's curriculum. The third part of the questionnaire was designed to collect information on areas of practice/service delivery and background data on clients to whom OT-SI services are delivered. The fourth part aimed at obtaining information relating to the assessment instruments used in practice. The last part of the questionnaire focused

on their professional career pathways; here the questions gathered information on postgraduate qualifications relevant to possible future users of the curriculum.

The demographic questions were measured on a nominal level, as the questions were aimed at securing clear and definite answers about qualifications and years of experience. There were, however, opportunities for open-ended questions and the candidate made use of these to record reasons for responses (cf. Annexure I), aiming at understanding both the “why” of the choice and the details of the choice (Polgar & Thomas, 2008, p. 101). The questions on perceived levels of competencies and levels of satisfaction were measured at an ordinal-level. Answers were categorised and provided a definite ‘position’, as participants had a choice between for example a basic level, intermediate level, advanced level or specialist level of skill. It was thus possible for the candidate to place their opinions in a ranking order and report on them numerically (Delport & Roestenburg, 2011, pp. 179, 180). Two open-ended questions were also posed on competencies. These aimed at identifying competencies which were gained but were not pre-determined or those that were assumed to be gained by participants but did not materialise. One question was designed to identify and prioritise those learning opportunities which contributed the most to the attainment of the participants’ competencies. All open-ended questions were categorised and numerically analysed (Burgess, 2001, p. 8). Those relating to service delivery and the use of tests included multi-response questions, since in real-world settings service is very seldom delivered to one specific population group in one area of service delivery (Burgess, 2001, p. 9).

4.5.2.1.2.3.1 Validity and reliability of the questionnaire

The researcher aspired for validity and reliability firstly by ensuring that each question was related to only one concept. She avoided the use of jargon and acronyms, and no leading questions, double-barrelled or negatively framed questions were included (Delport & Roestenburg, 2011, p. 192; Burgess, 2001, pp. 6-12).

Content validity was maximised by ensuring that all areas of possible questions were addressed (Delport & Roestenburg, 2011, p. 173). Separate questions were asked for

each of the SAISI courses, so that opinions and levels of satisfaction could be individually obtained on theoretical, assessment, interpretation and intervention competencies. To ensure face validity as well as content validity, the candidate approached two participants who not only adhered to the inclusion criteria but were also knowledgeable on the subject and experienced in compiling questionnaires to pilot the completion of the questionnaire. No recommendations for changes were received from them. This step could be seen as a quality assurance step relevant to the validity of the instrument (Delpont & Roestenburg 2011, p. 173).

The reliability of a self-developed questionnaire will always be doubtful unless it has undergone a process of test-retest (Delpont & Roestenburg, 2011, pp. 177, 178). This was not feasible for this research, as the questionnaire was a once-off set of questions asked of a specific population to obtain information for the design of a specific curriculum. Reliability was, however, enhanced by using EvaSys for the design, development and completion of the questionnaire. All the participants completed the questionnaire online, which meant that the instructions and manner of completion were standard for all their contributions. The scoring procedure was also electronic and was thus also standardised (Delpont & Roestenburg, 2011, p. 177).

4.5.2.1.2.3.2 Pilot Study

As already noted, the questionnaire was subjected to a pilot study. Two participants meeting the inclusion criteria and selected because of their knowledge of SAISI courses and training and their experience in compiling questionnaires were approached to complete it and provide feedback (Strydom, 2011(b), pp. 237-239). Both were contacted telephonically regarding possible participation and after agreeing to pilot the questionnaire an e-mail was sent to them with the information letter that was also included in the invitation to the other SAISI trained occupational therapists (Annexure J) and the link to the EvaSys questionnaire. Both completed the questionnaire, providing feedback that they had no reservations about the questionnaire or about completing it. Both sets of responses were included in the research sample, as the candidate now judged the

questionnaire as suitable for its purpose (cf. 4.4.2.2.1 Background to objective 2.3) (Strydom, 2011(b), p. 242).

4.5.2.1.2.3.3 Data collection

An e-mail requesting participation together with an attached information and letter of invite (cf. Annexure J) was sent to the office of SAISI with a request that it be sent out to those members who had met the inclusion criteria for this part of the research. The initial request was for members to complete the questionnaire within two weeks. At the end of the two weeks, a reminder e-mail was sent out via the SAISI office.

4.5.2.1.2.4 Data analysis

The quantitative data analysis was carried out by the Department of Biostatistics, School of Medicine, Faculty of Health Sciences, University of the Free State. Data were analysed using SAS/STAT® version 9.4 for Windows, copyright 2016, SAS Institute, Carey, NC. The results are presented as frequencies with percentages.

4.5.2.1.2.5 Results and the discussion

Due to the nature of this research, the candidate will present both the results and the discussion on them in this section.

The questionnaire was sent out to 386 members of SAISI who had successfully completed the four ASI® training courses between 2008 and 2015. At the end of the initial timeframe of two weeks for completion of the questionnaire, 70 members had completed it. Given that the response rate at that stage was only 18.13%, the candidate, as already noted, decided to prolong the time for completion by a week, and a further e-mail reminder was sent out by the SAISI office. At the end of the third week, 131 members had completed the questionnaire, the response rate now being 33.93%. Opinion in the literature is divided on what constitutes a good response rate for an online questionnaire, but according to Fryrear from Surveygizmo (2015, p. n p), a leading survey platform

specialising in professional surveys, a well targeted questionnaire could receive a response rate of 30-40%. This is confirmed by a meta-analyses study done by Shih and Fan in which they compared results of Web and mail modes of surveys and found that a 34% response rate for Web surveys was average (Shih & Fan, 2008, p. 257). For some authors the overload of electronic mail and requests to take part in surveys has a negative impact on response rates (Welsch & Barlau, 2013, p. 4), and this explains why some response rates can be as low as 10% (Fryrear, 2015, p. n p). Considering this, the candidate decided that a response rate of 33.93% would be sufficient. She believed that factors such as loyalty to a specialist field in the profession and that the questionnaire was distributed by SAISI to members fulfilling the criteria for inclusion, contributed to an acceptable response rate.

4.5.2.1.2.5.1 Demographic results

According to the demographic results of the questionnaire, one participant had already qualified as an occupational therapist in 1964, while the three most recent qualifications were in 2011. Summarising the whole sample in terms of year of qualification, 35.11% (n=46) qualified between 1964 and 1999, 29.77% (n=39) between 2000 and 2005, and 35.11% (n=46) between 2006 and 2011. Two (1.53%) said that they had been treating children/individuals with sensory integration difficulties for 35 years, while one (0.76%) indicated that she only had one year of experience in the treatment of ASI®. The median time that participants had been treating children/individuals with sensory integration difficulties was 9 years.

Questions were asked on which populations were served with ASI® services, and the contexts of service delivery and the related results are given in Table 4.16. Since occupational therapists work with more than one age group and could deliver services in more than one context they had the option of indicating more than one choice in each of the different sections.

Table 4.16: Areas of service delivery and contexts of service delivery

To whom are ASI® services provided (n=131)		Context/s of service delivery (n=131)	
Infants	35.11% (n=46)	Private practice	86.26% (n=113)
Toddlers	80.15% (n=105)	Dept of Health	6.11% (n=8)
School age	96.95% (n=127)	Dept of Education	22.90% (n=30)
Adolescents	24.43% (n=32)	NGO	6.87% (n=9)
Adults	12.98% (n=17)	Other	3.82% (n=5)
Elderly	0		

The majority of the participants delivered services to toddlers (80.15%) and school-aged children (96.95%). None delivered ASI® services to the elderly at the time of completion of the questionnaire. The importance of delivering ASI® services over the lifespan is receiving more and more attention internationally, and it was affirming to see that 24.43% of participants were delivering services to adolescents experiencing sensory integration challenges, 12.98% to adults and 35.11% to infants. These results confirmed international trends and the necessity of including ASI® service delivery over the lifespan in the design of the curriculum.

It was not surprising that 86.26% of the participants were delivering services in the context of a private practice. This confirmed the general view that most ASI® services are only available to those who can afford them or who have medical aids supporting occupational therapy services. Although no definite explanation can be provided, and it is only the subjective experience of the candidate, but it is significant that there seems to be an increase in occupational therapists delivering ASI® services in the public education system (22.90%). Results of the percentage of participants delivering services to different income groups confirmed the need to deliver services to those who cannot necessarily afford sensory integration services (29.77% of participants delivered services to low and middle-income groups, while 9.92% delivered services to clients who had no income (cf. Table 4.17)).

Table 4.17: Income group of clients (per household) to which services are delivered

Income group (n=131)	
Elite (above R40.000 per month)	44.27% (n=58)
Relatively affluent middle (R5,600-R40,000 per month)	77.86% (n=102)
Low and actual middle (R1.00-R5, 599 per month)	29.77% (n=39)
No income	9.92% (n=9.92)

Although the majority of ASI® service delivery was still focused on toddlers and school-age children from elite and relatively affluent income groups, the above results remind United States that ASI® services in South Africa are relevant for all age groups over the lifespan, irrespective of income, and needed to be addressed in the design of the curriculum.

4.5.2.1.2.5.2 Results on perceived knowledge and skill levels after completion of SAISI courses

The participants were asked to give their opinion on their relevant knowledge and skills levels once they had completed each of the four SAISI courses. Their responses gave the candidate useful information on their perceived attainment of knowledge and skills, especially since the SAISI courses will be a prerequisite for entering this master's qualification, taking into account the guidelines for educational levels set by the ICEASI (Baltazar Mori, et al., 2017, p. 10).

Table 4.18: Participants’ perceived levels of knowledge and skills after completion of each of the SAISI courses

Course (n=131)	Basic	Intermediate	Advanced	Specialist
Theory Level of knowledge (n=131)	1.53% (n=2)	47.33% (n=62)	48.85% (n=64)	2.29 (n=3)
Test Administration Level of skills (n=130)	6.15% (n=8)	49.23% (n=64)	33.85% (n=44)	10.77% (n=14)
Test Interpretation Level of knowledge (n=131)	6.87% (n=9)	54.20% (n=71)	35.88% (n=47)	3.05% (n=4)
Treatment Level of knowledge (n=130)	0.77% (n=1)	26.92% (n=35)	57.69% (n=75)	14.62% (n=19)

Two of the questions were unfortunately omitted by some participants and the reason for this is not known. As is evident from the results, most of the participants felt that their levels of knowledge/skills after completing the SAISI courses were on an intermediate or advanced level (cf. Table 4.18). The majority also felt that their theoretical knowledge was on an advanced level (48.85%). The Test Administration Course of SAISI is focused on attaining skills in the administration of the Sensory integration and Praxis Tests (SIPT), and the majority (49.23%) indicated that their skills in this area were on an intermediate level. The SAISI Test Interpretation Course is focused on obtaining knowledge of the different patterns of sensory integration dysfunctions and on understanding the interpretation of tests results of children assessed with the SIPT. The results showed that the majority of the participants (54.20%) perceived their knowledge levels of interpretation also at an intermediate level. During the SAISI treatment course acquiring knowledge on ASI® intervention is a major outcome. The results showed that the majority of participants (57.69%) perceived their knowledge of treatment to be at an advanced level.

If the levels of training established by ICEASI (2016) are taken into account, it is noteworthy that participants who had completed the SAISI courses perceived their levels of knowledge/skills after completing each of the courses to be on either an intermediate or an advanced level. The SAISI courses, although not yet accredited by SAQA, are

designed to be delivered at a postgraduate diploma level, so it would be appropriate for the users of the projected curriculum to enter at an acceptable level of either intermediate or advanced knowledge/skills. ICEASI (2016) has established the level of successful completion of the international theory, test, interpretation and treatment training courses which should produce advanced sensory integration practitioners. In terms of the design of the curriculum, the results showed that the candidate would need to include (or repeat) some of the outcomes which had already been attained in the SAISI training courses. This result is important not only for this study but also in terms of international standards and the planning of additional qualifications in the framework of the ASI® training available in South Africa.

4.5.2.1.2.5.3 Levels of satisfaction related to competencies identified by the international experts in ASI®.

The questions on additional competencies and levels of satisfaction included in the questionnaire were based on the competencies identified by the international experts in ASI® as important (cf. 4.4.1.3.4: Fig 4.4). Being involved in the SAISI training courses, the candidate knew that some of the competencies identified by the international experts were already included as outcomes in the SAISI training courses. It was important therefore to determine the practitioners' perceived levels of certain of the competencies, in order to decide to what extent these needed to be addressed in the designed curriculum. The candidate also decided to question the levels of satisfaction in terms of the competencies attained, as she felt this would be a little more objective than asking the participants directly about their competencies.

Table 4.19: Levels of satisfaction related to competencies attained

Competencies (n=131)	Basic	Intermediate	Advanced	Specialist
Clinical reasoning (n=130)	0.77% (n=1)	3.08% (n=4)	58.46% (n=76)	37.69% (n=49)
Relating sensory integration skills to occupational performance (n=130)	0% (n=0)	4.62 % (n=6)	60% (n=78)	35.38 % (n=46)
Developing meaningful and measurable outcomes and goals (n=130)	1.54% (n=2)	20% (n=26)	58.46% (n=76)	20% (n=26)
Developing evidence-based intervention plans (n=131)	0% (n=0)	12.98% (n=17)	60.31% (n=79)	26.72% (n=35)
Communicate verbally on sensory integration difficulties/dysfunctions (n=131)	0.76% (n=1)	8.40% (n=11)	54.20% (n=71)	36.64 (n=48)
Communicate in writing on sensory integration difficulties/dysfunctions (n=129)	0.78% (n=1)	14.73% (n=19)	55.81% (n=72)	28.68 (n=37)

Some of these questions were omitted by individual participants and the reason for this is not known. It was clear from the results shown in Table 4.19 that the vast majority felt they had advanced (58.46%) or specialist (37.69%) levels of clinical reasoning skills. In hindsight, the candidate felt she should have worded the question differently, as the focus was only on clinical reasoning skills, not on clinical reasoning skills in terms of ASI® theory, assessment and intervention. Although she had assumed that participants would answer the question as it related to ASI®, it could also have been interpreted as general clinical reasoning skills. On the other questions, the majority of the participants, varying between 54.20%-60.31%, felt that their satisfaction with the competencies attained was at an advanced level. Once again, this is the ideal level (ICEASI, 2016) for entering a master's programme.

Participants also had the opportunity to indicate whether they had attained any other competencies during the completion of the SAISI training courses that they would like to mention, and also whether there were competencies they would like to have achieved but had not. There were no attained competencies identified as noteworthy in terms of

impacting on curriculum design decisions. The competency that was mentioned the most was observational skills, albeit only by 6.11% (n=8). Competencies that were mentioned as “like to have attained but did not” were goal setting (4.58% (n=6)), use of apparatus (2.29% (n=3)), communicating sensory integration to parents (3.05% (4)), report writing (6.87% n=9), skills in treating modulation difficulties (3.82% (n=5)), and sensory integration techniques (1.53% n=2)). It is interesting to note that the majority of these competencies are addressed in the SAISI courses to a greater or lesser extent. Although the percentage of participants who indicated them was low, it would be important for SAISI to take note of these results. Research skills (indicated by 1.53% (n=2)) and sensory integration and diverse populations (indicated by 9.6% (n=12)) were also reported as “like to have attained but did not” were not competencies set in the outcomes for the SAISI training courses but will be applicable for the curriculum in design.

The results of these questions supported the candidate’s argument that some of the competencies identified by the international experts had already been attained in the SAISI training courses and that this needed to be considered during development of outcomes and teaching and learning activities for the designed curriculum.

4.4.2.2.7.4 Results on learning experiences that contributed most to competencies gained during SAISI training courses

The candidate argued that it would be useful to find out which learning activities the participants saw as valuable during their SAISI training courses, as this could guide her in making decisions on which learning experiences to include in the design of the curriculum.

Table 4.20: Valuable learning experiences identified by participants as contributing to their competencies

Learning experiences (n=131)	
Live demonstrations	22.14% (n=29)
Writing of case study protocol	19.85% (n=26)
Clinical reasoning opportunities	8.40% (n=11)
Watching and discussing videos	7.63% (n=10)
Fidelity Measure activities	4.58% (n=6)
Mentoring	3.82% (n=5)

Table 4.20 shows the learning experiences that were identified by five or more of the participants as contributing most to the competencies they gained during the four SAISI training courses. It was clear that live demonstrations were seen as the most valuable (22.14% (n=29)) in developing competencies in ASI® assessment and intervention. The experience identified as the second-best was the writing of a protocol (19.85% (n=26)) involving an in-depth case study. Clinical reasoning opportunities were the third best contributor (8.40% (n=11)).

With the benefit of hindsight, the candidate felt that this question was one that she would approach differently, should a similar questionnaire be developed in the future. The question was an open-ended one, allowing participants to identify any of the learning experiences they remembered. Giving a list of specific learning experiences and asking them to identify the four or five most valuable might have been more useful when deciding on which teaching and learning activities to include in the curriculum. The results obtained here could however be used in the choice of teaching and learning activities to be included in the curriculum.

4.5.2.1.2.5.4 Results on the use of the SIPT and other related tests

Assessing sensory integration functions and using the results to make evidence-based decisions for intervention were identified by international ASI® experts as strongly related

to the competencies of a specialist occupational therapist on a master's level. The candidate was very aware of the ongoing controversy on the use of the SIPT, considered as the gold standard of assessment in the field (Smith Roley & Schaaf, 2006, p. 25), and the costs and time involved. These were already a real challenge in South Africa for occupational therapists in private practice who were working with middle- to higher-income households, let alone for those working in the governmental or community sectors. The candidate therefore wanted to find out how many occupational therapists trained in the use of the SIPT were actually using it in practice. She also wanted to know which other tests were being used to assess sensory integration functions. The results on the frequency of use of the SIPT are given in Table 4.21.

Table 4.21: Use of SIPT

Frequency of SIPT use (n=130)	
Never use it	31.54% (n=41)
Use it only when sensory integration difficulties are suspected	26.92% (n=35)
Use it once in a while to stay updated	18.46% (n=24)
Use it only when requested to do so	14.62% (n=19)
Use it on all the children that are referred	8.46% (n=11)

The results of this question confirmed the candidate's belief that the SIPT is used inconsistently, with 31.54% (n=41) of participants indicating that they never used it and 18.46% (n=24) only using it once in a while in order to stay updated. The concern in the above results is with the competency level of South African sensory integration trained occupational therapists, in the use of an instrument such as the SIPT. The administration and interpretation of the SIPT call for competencies that will need to be considered in the design of the curriculum. Five possible reasons for the non-use of the SIPT were given by the participants and the results are shown in Table 4.22.

Table 4.22: Reasons for non-use of the SIPT

Reasons for the non-use of the SIPT use (n=130)	
Too expensive	61.83% (n=81)
Too long to administer and score the test	38.93% (n=51)
Not applicable for age group for which services is delivered	14.50% (n=19)
Too complex to administer	12.21% (n=16)
Do not have confidence in the results	3.05% (n=4)

It was clear that the majority of the participants (61.83% (n=81)) felt that the SIPT was too expensive, while 38.93% (n=51) said that the test took too long to administer and to score. These two objections do hold water, as a new test is currently being developed in the USA (Evaluation for Ayres Sensory Integration) (Mailloux, 2017). One of the reasons for the development of the Evaluation for Ayres Sensory Integration (EASI) was the costs involved in the SIPT. The authors of the test, Dr Zoe Mailloux, Dr Susanne Smith Roley and Prof Diane Parham, are committed to offering a way for therapists around the globe to carry out comprehensive evaluation of sensory integration functions in an accessible and feasible manner (Mailloux, 2017). The EASI development also includes international normative data collection. South Africa is also involved in this, meaning that the test will be standardized for children growing up in this country. The plan is that the international normative data collection on the EASI will start early in 2018. The results of the use of the SIPT and the EASI test, which will be available by 2020, will need to be considered once the details of specific teaching and learning activities are decided on.

Other tests that provide information on sensory integration functions were also relevant for the design of the curriculum. The candidate argued that information was needed on those tests which were in use in SA, as these would be used by occupational therapists delivering OT-SI. It could be expected that they would form part of the case studies and decision-making processes of the prospective users of the curriculum. Those tests in use that were identified by five or more participants, as well as their percentage of use, are given in Table 4.23.

Table 4.23: Other tests used to assess sensory integration functions

Other tests (n=131)	
Sensory Profile (Winnie Dunn)	45.04% (n=59)
Clinical Observations of Ayres	32.82% (n=43)
MAP	15.27% (n=20)
Sensory Processing Measure	12.21% (n=16)
DeGangi-Berk Test of Sensory Integration	11.45% (n=15)
TSFI	11.45% (n=15)
Beery-Buktenica developmental test for VMI	9.16% (n=12)
BOT 2	7.63% (n=10)
DTVP2/3	5.34% (n=7)
SAISI Gross Motor Items	4.58% (n=6)
TVPS	4.58% (n=6)
TIP	3.82% (n=5)

It was not surprising that the Sensory Profiles of Winnie Dunn were used by 45.05% (n=59) of the users, as this assessment instrument is easy to administer and provides information on the sensory processing abilities and the impact on daily performance in the home (Dunn, 1999, p. 1) and school environment (Dunn, 2006, p. 99). From practical experience, the candidate knew that in South Africa the Sensory Profiles were often used in conjunction with SIPT, as they give information on how children's neurological thresholds influence their response to sensory information, forming an important component of sensory modulation (Dunn, 1999, p. 9). The SIPT does not give detailed information on the modulation abilities of children, and an additional assessment instrument is therefore needed to collect data on sensory modulation.

The Clinical Observations of Jean Ayres offer an observational assessment instrument that is used to obtain information on abilities subserved by the sensory systems and the integration thereof (SAISI, 2005, pp. 4, 53). It forms part of the SAISI training courses and is also taught at some universities at an undergraduate level. It is often the first instrument to which occupational therapists in South Africa are exposed, giving them definite

information on the sensory integration abilities of a child. It was therefore not surprising that it was the second most used (32.82% (n=43)) by occupational therapists delivering OT-SI services in South Africa.

The results in Table 4.23, from the questions on the use of assessment instruments providing information on sensory integration functions, were a cause for concern. A breakdown of the data on the frequency of use of the SIPT was an additional reason for concern. According to the data, 2.29% (n=3) of the participants only used the SIPT as an assessment instrument, with no additional instruments, while 5.34% (n=7) only used the SIPT infrequently, 6.08% (n=8) used it only when sensory integration dysfunctions were suspected but with no other tests, and 1.53% (n=2), used it only on request, but with no other tests. Most concerning of all, the results indicated that 6.84% (n=9) of the occupational therapists delivering OT-SI services did not use any tests.

The under-use of the SIPT and other assessment instruments may affect the level of data driven assessment knowledge and skills with which future users of the projected curriculum enter the programme. In deciding on teaching and learning activities to be included in the curriculum, the candidate therefore had to ensure that the use of assessment instruments was considered and addressed.

4.5.2.1.2.5.5 Interest in formal post-graduate studies in the field of SI

The candidate used this quantitative data-collection opportunity to enquire about the participants' career pathways and their interest in further formal postgraduate studies, should these become available. The results are presented in Table 4.24.

Table 4.24: Interest in formal post-graduate studies in the field of SI

Interest in postgraduate qualifications (n=131)	
Formal Postgraduate Diploma	45.80% (n=60)
Professional Master's Degree SI	70.99% (n=93)
Professional Doctoral Degree SI	28.24% (n=37)

The fact that 70.99% (n=93) of participants indicated they would be interested in obtaining a professional master's degree in sensory integration, confirmed the interest in a qualification such as an M OT (SI) degree. This was a heart-warming and encouraging result for the candidate, quantitatively confirming a high interest in a qualification such as the one in progress.

4.5.2.1.2.6 Conclusion of phase objective 2.2

This research activity set out to record perceived levels of competencies and satisfaction, identifying valuable learning experiences by members of SAISI who had successfully completed the SAISI training courses, and securing relevant demographic information. The general demographic information included areas of practice/service delivery, along with valuable data on the use of the SIPT and other SI-related tests.

The participants' levels of perceived competencies after completing each of the four SAISI courses and their levels of satisfaction with specific identified competencies confirmed the levels of competencies which could be expected from future users of the curriculum (cf. 4.5.2.1.2.4.3). The results also highlighted valuable learning experiences that could be considered for inclusion in the curriculum (cf. 4.4.2.2.7.4). Additional information, such as the use of the SIPT and other tests (cf. 4.5.2.1.2.4.4), contributed to the further development of outcomes and teaching and learning activities. For Prototype 2 of the curriculum, the reader is referred to Annexure G. Although some of the details, such as which other tests are used to identify sensory integration difficulties, might not surface by name, they did reinforce the importance of including assessment activities in the design of the curriculum.

4.5.2.1.3 Phase objective 2.3: Developing and refining design requirements and design propositions

The objective on partial design requirements and initial propositions that evolved from the analysis and exploration phase (Objective 1.5 of the micro-cycle in the analysis

and exploration phase) was carried over to the first micro-cycle of the design and construction phase as phase objective 2.3 and is presented in Table 4.25.

Table 4.25: Emerging design requirements and propositions

Design requirement	All qualification and curriculum components must be supported and guided by the relevant statutory documents and literature as they provide the structure, limits and <i>expected requirements for the design of a curriculum.</i>
Design proposition	International <i>and national</i> expertise should be consulted in identifying <i>core competencies to be included in the design of a specialist curriculum.</i>

Note: Changes/additions are indicated in italic

Additions/changes to the already identified design requirement and design proposition are indicated in italics in Table 4.25. An important insight that emerged during this micro-cycle was the importance of local experts. Their knowledge of the realities of both sensory integration and higher education in the South African context made a valuable contribution to refining the Model of Competencies and to the further design of the curriculum.

At this stage of the research the candidate began to get a real ‘feel’ of how the results of the process would, in the words of McKenney and Reeves, “feed into the next phase of design and construction” (2012, p. 104).

4.5.2.2 Conclusion of the first micro-cycle of the design and construction phase

The data generated from this micro-cycle enabled the candidate to further design and construct the curriculum. This led to a second version of the Model of Competencies (cf. Figure 4.7) and to Prototype 2 of the curriculum (cf. Annexure G).

As a conclusion to this first micro-cycle of research activities in the design and construction phase, an update is given in Table 4.26 on the design status and actions needed for the second micro-cycle in this phase. (For the first core design areas of M OT (SI)’s design status and actions needed, refer to Table 4.8 in 4.5.1.4.).

Table 4.26: Core design areas of M OT (SI), design status and actions needed after completion of the first micro-cycle in the design and construction phase

Core Design Areas	Status	Actions needed
Core competencies to be attained	Data used to further development of Model of Competencies.	Continued review and refinement.
Curriculum and Components		
a) Qualification and outcomes	Refinement of curriculum outcomes.	Further refinement when indicated by data.
b) Modules	Modules identified and feedback received from of South African experts in ASI®	Further adaptations to modules if indicated by data.
c) Module themes	In development.	To be refined.
d) Module outcomes	In development.	Formulated and needs to be subjected to another round of review.
e) Module specific outcomes	In development.	Formulated and needs to be subjected to another round of review, especially in terms of realities of delivering sensory integration services in the South African context.
f) Teaching and learning activities	Additional activities identified by South African experts in ASI®	Included in outcomes and needs further refinement.
g) Assessment and description	Identified.	Included in outcomes and needs further refinement.
General information on context and conditions of curriculum	In process of identifying.	It was identified that further information and data were needed on the mode of delivery and RPL.

Table 4.26, on design status and the actions needed following completion of the first micro-cycle in the design and construction phase, indicated that all areas of the curriculum still needed refinement. Specific areas identified were the realities of delivering ASI® services in the South African context, mode of delivery, and RPL. The reasoning on how this was to be approached will be given in the discussion of the micro-cycle 2 of the design and construction phase (cf. 4.5.3).

In conclusion: McKenney and Reeves (2012, p. 80) talk about the “ripening” of the two products of educational design research (the intervention, which in the case of this research is the curriculum, and the theoretical understandings or the creation of new knowledge, which are the design requirements and the design principles). At the end of this micro-cycle, the candidate started to experience the truth of this statement, enhancing her own valuation of and belief in the educational design research process.

4.5.3 Design and Construction Phase: Micro Cycle 2

In concluding Micro-cycle 1 of the design and construction phase, the candidate identified definite aspects that needed attention in furthering the design of the curriculum. Although all areas of the curriculum components needed further development and/or refinement, a specific knowledge gap was identified relating to the realities of delivering OT-SI services in under-resourced and/or rural contexts in SA. More opinions on the mode of delivery of the curriculum were needed and RPL needed further exploration. The candidate also needed to know the views and opinions of clinicians delivering OT-SI services on prototype 2 of the curriculum. At this stage of the design process she reasoned that it would be valuable to obtain the views and opinions of occupational therapists who had qualified with a master’s degree in occupational therapy, but had also delivered services in the field of sensory integration. She also reasoned that, given their experience, they would be a suitable source of views and opinions on the content of prototype 2 of the curriculum.

Embarking on this second micro-cycle of the design and construction phase, with the aim of expanding and refining the curriculum to arrive at Prototype 3, the candidate formulated two phase objectives. The first was to obtain the views and opinions of occupational therapists who delivered OT-SI services in diverse environments, while the second was to obtain the views and opinions of occupational therapists who were delivering OT-SI services and who had completed (or were in the process of completing) master’s degrees in any field of occupational therapy, on challenges and opportunities they had experienced in their master’s journey. A further aim was to submit prototype 2 of the

curriculum to the opinions of the same group of occupational therapists. A summary of these aims, objectives, activities and sources is given in Table 4.27.

Table 4.27: Aim of the phase, phase objectives, activities and resources for the design and construction phase - micro-cycle 2

3 Design and Construction Phase: Micro Cycle 2			
Aim of the phase: To expand and refine the curriculum to arrive at Prototype 3 in the process of arriving at an intended effective and internationally acknowledged curriculum			
Phase objectives	Activities	Sources	
3.1 To obtain the views and opinions of occupational therapists who delivered OT-SI services in diverse and under resourced environments.	a) Identify and recruit possible participants whilst also obtaining permission from participants willing to take part in the focus group. The same venue and arrangements applied to this group of participants as in 3.1. Both focus groups were held on the same day and same venue.	All occupational therapists delivering OT-SI services in diverse environments who are working in or near Cape Town.	3.3 To further refine existing design requirements and design propositions and identify new ones if relevant
3.2.1 To obtain the views of occupational therapists delivering OT-SI services and who have completed (or are in the process of completing) master's degrees in any field of occupational therapy on the challenges and opportunities they have experienced on their master's journey and 3.2.2 to additionally obtain their opinions on prototype 2 of the curriculum.	a) Identify and recruit possible participants whilst also obtaining permission from participants willing to take part in the focus group. c) Arrange for a suitable venue, date, time and catering for the focus group. d) Arrange with colleague for the facilitation of the focus group. e) Make the necessary travel and accommodation arrangements for facilitator and candidate.	All occupational therapists delivering OT-SI services, who have completed a master's degree (or are in the process of completing one) in any field of occupational therapy and are working in or near Cape Town.	

Although the general methodological working methods were discussed in Chapter 4 (cf. 4.2), the specific decisions on methodology made for this micro-cycle will be discussed in the next section.

4.5.3.1 *Specific methodological considerations pertaining to Micro-Cycle 2 of the Design and Construction phase*

During this micro-cycle, specific considerations relating to data sources and the research activities arose as the candidate strove to generate valuable data that could contribute to the aim of expanding and refining the curriculum to arrive at Prototype 3.

4.5.3.2 *Data sources*

In considering possible populations that could provide the richest and most valuable information, it became clear to the candidate that she first needed data from occupational therapists who delivered sensory integration services in diverse settings (under-resourced and rural environments). They would be able to provide rich data and identify challenges they had experienced which would need to be addressed in the design of the curriculum. Secondly, she reasoned that the views and opinions of those occupational therapists delivering OT-SI services who had also completed a master's degree (or were in the process of completing one) in any field of occupational therapy could add value to the design of prototype 2 of the curriculum. Not only would they have knowledge on sensory integration training, enabling them to offer views and opinions on prototype 2, but would also know what the journey entailed in becoming a master in the field of occupational therapy. Having herself been a study leader for master's students, the candidate knew from her own experience that obtaining a master's degree in any field of occupational therapy has its own unique challenges. She argued that obtaining knowledge on what was generally experienced as challenges and possibilities in a master's degree journey could add valuable data to the design process. Pitfalls could be identified and avoided, while emerging possibilities (or enablers) could be considered for inclusion in the design of the curriculum. She therefore decided to approach occupational therapists who delivered OT-SI services and who had completed a master's degree in any field of occupational therapy, or were in the process of completing one, for participation.

In considering regions on a national level where occupational therapists delivering OT-SI services in diverse or rural environments could be found, the candidate singled out two regions, those of Johannesburg and Cape Town. She knew from her involvement with SAISI that these were the two regions which had the largest number of occupational therapists who could be approached for participation in both groups. Two leaders, one in each region, in the field of OT-SI and actively involved in SAISI, were asked to compile a list of possible participants for both groups. The results are shown in Table 4.28.

Table 4.28: Participants for groups - occupational therapists delivering OT-SI services in under-resourced settings and M OT

Participants	Johannesburg	Cape Town
Identified possible participants: under-resourced settings	5	7
Willing to participate: under-resourced settings		5
Identified M occupational therapists	5	8
Willing to participate M occupational therapists		5

More occupational therapists for possible participation were identified in the Cape Town region. Two of the occupational therapists in the Johannesburg group fitted the criteria for both groups, but were employed in academic positions and their exposure to under-resourced sensory integration service delivery was limited to student training or involvement in current research. The candidate therefore decided to conduct both groups in Cape Town, as five participants for each group were available there (cf. Table 4.28). One of the participants in Cape Town also fitted the criteria for both groups. She not only held a master's degree but additionally had vast experience of delivering OT-SI services in under-resourced environments.

4.5.3.3 Research activities and method of data generation

Both the activities in micro-cycle 2 of the design and construction phase were focus groups. The candidate wanted to obtain the views, opinions and experiences of both groups. Focus groups can be used to obtain information, validation, perceptions and

viewpoints on focused areas of interest (Greeff, 2011, p. 361), providing rich sources of “insights and interpretations from the participants (Polgar & Thomas, 2008, p. 111).

The candidate first needed information from occupational therapists who were delivering OT-SI services in rural and/or under-resourced environments. It had become clear from phase objective 2.1 (cf. 4.5.2.1.1) that South African experts in ASI® who held academic posts at universities and also lectured for SAISI felt that information was needed on the realities of delivering OT-SI services in diverse contexts, and that this should be addressed in the content of the curriculum. Much is known and has been published on the delivery of ASI® services in enriched environments (Bundy, Lane, & Murray, 2002; Ayres A. J., 2004; Parham & Mailloux, 2015; Schaaf & Mailloux, 2015). However, publications addressing ASI® service delivery in diverse and under-resourced environments are scarce. Currently this is best described in Smith-Roley, Blanche, and Schaaf (2001) and Schaaf and Smith-Roley (2006). These two sources focus on diverse populations, with the first containing a chapter on “The Effects of Deprivation on Processing, Play and Praxis” by Cermak (Cermak, 2001, pp. 385-408). This examines the impact of deprivation on sensory integration abilities and some of the realities of intervention, but does not address a context relevant to the realities of South Africa. The second source contains a chapter on “Children who have Experienced Environmental Deprivation” (Schaaf & Smith-Roley, 2006, pp. 171-180), which examines the implications for service delivery and provides key assessment and intervention principles for delivering services in environmentally deprived environments. In general, however, information is limited and thus justifies obtaining data that are relevant for the South African context.

Secondly, the candidate wanted to explore the opportunities and challenges experienced by occupational therapists delivering OT-SI services who had already completed a master’s degree or were in the process of completing one in the field of occupational therapy. Additionally, she wanted to obtain their opinion on prototype 2 of the curriculum, since not only had they been through the journey of obtaining a master’s degree but were also able to offer valuable opinions on a master’s degree specialising in ASI® service delivery, as they were all involved in delivering OT-SI services. The candidate argued that

this specific group had information and experience that could contribute in a unique manner to the further design of the curriculum.

Using focus groups would enable her to generate supplementary data for the design of the curriculum, aimed at specific aspects. Groups were therefore carefully planned, a framework was drawn up to guide discussions on specific topics (cf. Annexure L and M), and group members were approached according to their specific interests, experience and/or qualification (Greeff, 2011, p. 361).

After indicating their willingness to take part, the participants for both focus groups were contacted via e-mail and a letter was sent to them explaining the purpose, nature, expectations and practicalities involved in the groups. The same letter was sent to both groups, with distinctions made for each of the groups on the reasons why they were approached (cf. Annexure K: Letter to occupational therapists in the field of sensory integration, p 2, 3).

Both focus groups were facilitated by the same colleague who had taken field notes during the interviews with the South African experts in ASI® (micro-cycle 1 of the design and construction phase, cf. 4.5.2.1.1.2). She was an experienced group facilitator working in the academic environment, well versed in conducting focus groups, and knowledgeable on the topic, the profession and the field of sensory integration, all qualities of a facilitator emphasized in the literature (Greeff, 2011, p. 368). The candidate acted as assistant facilitator, taking field notes for both groups, and was available for questions or clarification.

A framework for discussion were drawn up by the candidate for both groups (cf. Annexures L and M). Both sets of guidelines provided background, followed by topics for discussion. A preparation session was held with the facilitator prior to her departure for Cape Town, where the expectations and guidelines for both groups were discussed. For the focus group held with occupational therapists with a master's degree (or completing one), the candidate also wanted to obtain their views and opinions on prototype 2 of the

curriculum. However, a decision was made not to provide them with the curriculum beforehand. Instead, the candidate gave a short PowerPoint presentation on prototype 2 at the beginning of the session and gave them a handout of the PowerPoint (cf. Annexure N). This was done to ensure that the finer details of the curriculum would remain in the possession of the candidate since by now it was no longer only a skeleton curriculum.

4.5.3.4 *Data management and analysis*

Data generation for both sessions was done following the process discussed in 4.2.2 (Data generation) with no modifications. Data obtained during the focus group with the occupational therapists who were delivering OT-SI services and had already completed a master's degree or were completing one in the field of occupational therapy were managed as described in 4.2.3. (Data management) and then analysed as described in 4.2.4 (Data analysis).

Although the data generated during the focus group with occupational therapists delivering OT-SI services in rural and/or under-resourced environments were managed in the same manner as the previous qualitative data, the coding was based on inductive reasoning. The candidate had her own knowledge, obtained through previous research, as well as experience delivering services in rural and under-resourced environments. This was combined with knowledge available on social platforms on general assumptions about the realities of delivering OT-SI services in rural and/or under-resourced environments. However, for the design of this curriculum it was important to gather knowledge in a scientific manner on OT-SI service delivery. Deductive reasoning allowed the experiences and perceptions of the participants to be conveyed without their being influenced by prior knowledge or preconceived ideas (Delpont & De Vos, 2011, p. 49). It also allowed the candidate to identify competencies additionally needed in order to deliver specialist OT-SI services in rural and/or under-resourced environments.

4.5.3.5 Findings of phase objective 3.1

The focus group with occupational therapists delivering OT-SI services in rural and/or under-resourced environments (diverse settings) consisted of five occupational therapists, of whom two worked for non-governmental organisations (NGOs), one was employed by the Education Department, working in rural schools, one delivered OT-SI services in various community settings, one was in private practice but spent a substantial amount of time delivering OT-SI services in a community setting and had previous experience of working in rural schools and communities, and one was a lecturer at a university working with students in communities and rural schools delivering basic OT-SI services. The focus group was conducted and concluded in an hour.

Two categories emerged from the data. These were ‘Practising sensory integration in diverse contexts’ (3.1.1) and ‘Enablers of sensory integration services in diverse contexts’ (3.1.2). They are displayed in Figure 4.8, together with the codes contributing to each of the categories.

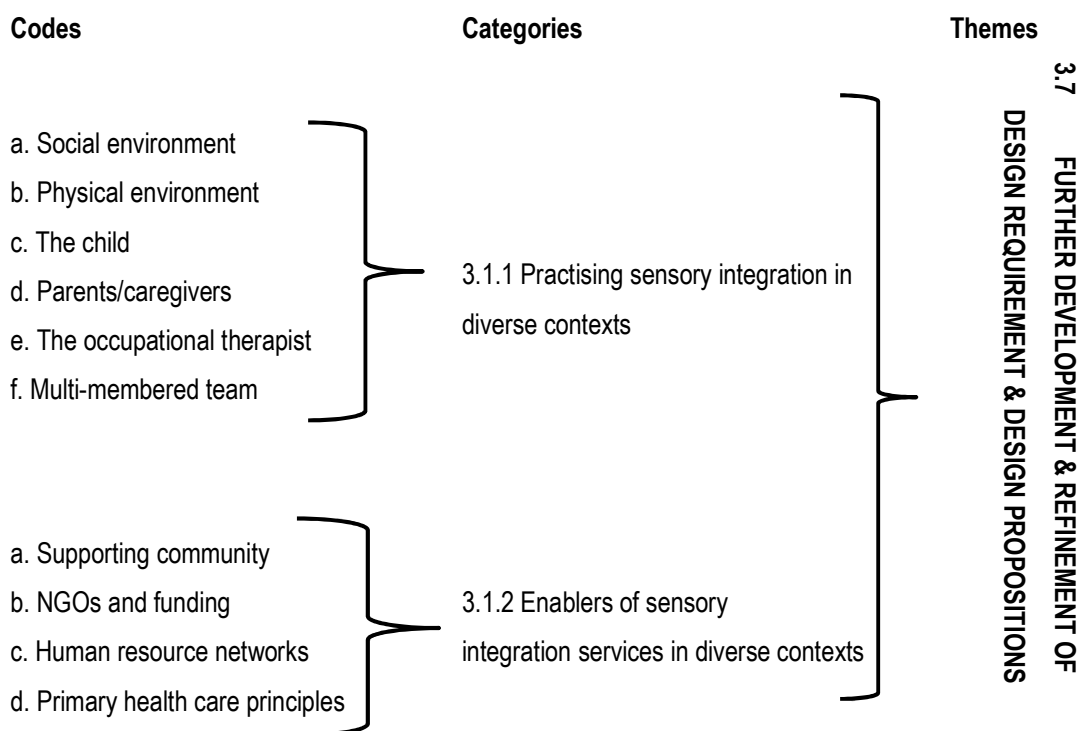


Figure 4.8: Data emerging from Micro-cycle 2, Phase objective 3.1 – Design and construction phase

4.5.3.5.1 Category of practising sensory integration in diverse contexts

Six codes contributed to the category of ‘Practising sensory integration in diverse contexts’ (cf. Figure 4.8: 3.1.1). These were ‘Social environment’ (a), ‘Physical environment’ (b), ‘The child’ (c), ‘Parents/caregivers’ (d), ‘The occupational therapist’ (e), and ‘Multi-membered team’ (f). Each of these codes contained valuable information and will therefore be summarised in terms of concepts identified and possible implications for the curriculum design.

Table 4.29: Summary of challenges identified according to category codes, related concepts, verbatim quotations and implications for curriculum design

Category: sensory integration in diverse contexts		
Code	Concepts	Verbatim quotations
a. Social environment	<ul style="list-style-type: none"> - Poverty - Substance abuse - Sexual abuse - Theft - Gang violence - Unemployment 	<p>Participant 4: <i>“Then of course there’s your theft in communities, so you get money pumped into the communities to build these beautiful schools and then someone from the community breaks in and steals all the food that the kids have for breakfast, or comes and steals the swings and the chains off the jungle-gym equipment, so you have these ransacked.”</i></p> <p>Participant 5: <i>“.....and the child I saw this morning lives in a drug-house and she’s being sexually abused...”</i></p>
Implication		
<p>The implication of factors in the social environment needs to be understood by the specialist MOT-SI. Examples are:</p> <ul style="list-style-type: none"> - the impact of hunger on a child’s engagement in assessment and intervention - the impact of sexual abuse on an individual’s sensory experiences - substance abuse and sensory integration 		
Code	Concepts	Verbatim quotations
b. Physical environment	<ul style="list-style-type: none"> - Long distances to travel - Under-resourced - Limited working space - Limited living space - Limited communication infra-structure 	<p>Participant 3: <i>“So, to be in that environment it just blocked them developmentally.”</i></p> <p>Participant 4: <i>“The children can’t play, the playgrounds aren’t accessible. The environments aren’t accessible, the houses are small and the spaces are limited.”</i></p>

Implications		
<p>Definite challenges exist in the physical environment which will need consideration by the specialist MOT-SI, of which limited working space and limited resources have a very direct impact on sensory integration service delivery. Equipping the MOT-SI with adaptation skills in terms of use of space and possible equipment will need to be included in the curriculum.</p>		
Code	Concepts	Verbatim quotations
c. The child	<ul style="list-style-type: none"> - Diverse pathologies - Deprived sensory opportunities - Poor school performance - Needs not met 	<p>Participant 2: “..the research we found that not only the children on the fetal alcohol spectrum, which is in the Robertson area, as high as 26% but also the not affected children scored very low on certain aspects..”</p> <p>Participant 1: “ children with stunted growth and the effect that has on the overall development..”</p> <p>Participant 3: “...children with severe and profound intellectual and physical disabilities.”</p> <p>Participant 4: “.you’ve got children with severe disabilities, as well as your learning disabilities..”</p> <p>Participant 1: “We did a research project in Philippi and Delft, and also did screenings, so I did simple developmental tests and things, and all scored significantly below the baseline.”</p> <p>Participant 4: “...never mind the fact that the occupation of play is completely... it is almost deprived from their lives.”</p> <p>Participant 1: “I think we forget children in South Africa are literally tired. They get up at 04:00 to get the bus at 05:00 to be at the school at 06:00, and not always having that structure at home, only going to bed at 22:00 because that’s when the parents go to bed.”</p>
Implications		
<p>Knowledge and understanding of diverse pathologies, their unique sensory integration challenges and the impact on occupational performance areas will be of importance for inclusion in the curriculum.</p>		
Code	Concepts	Verbatim quotations
d. Parents/caregivers	<ul style="list-style-type: none"> - Traditional beliefs on health and sickness - Absent parents - Uneducated and illiterate - Often involved in crime and/or substance abuse - Limited insight into child’s needs - Often in survival mode 	<p>Participant 5: “ babies who’ve been born to mothers who were using Tik in pregnancy. Moms are often prostitutes.”</p> <p>Participant 4: “...and still all your traditional beliefs that come into those systems as well. And your traditional beliefs that then are barriers, to a degree to what you are wanting to implement and what you believe are valuable recommendations. They’re not that valuable</p>

		<i>when they go against the traditional belief system.”</i>
Implications		
Knowledge on parents/caregivers’ realities will be of utmost importance as well as equipping the MOT-SI with the necessary attitude and skills to work with the parents on their level of understanding and functioning, and needs to be addressed in the curriculum.		
Code	Concepts	Verbatim quotations
e. The occupational therapist	<ul style="list-style-type: none"> - Large numbers of clients and large areas - Limited posts and absence of multi-disciplinary team - Language barriers - Personal safety - Limited info on and access to clients 	<p>Participant 2: <i>“It’s very... therapy-wise understaffed. We had about twelve thousand Grade-R’s. We had two teams with one occupational therapy, not a speech, occupational therapy, and one District Therapist.”</i></p> <p>Participant 4: <i>“You can’t implement home programs because there’s no one there.”</i></p> <p>Participant 5: <i>“Then ten minutes later the guard came and said, ‘Mevrou, ek dink jy moet nou gaan, want hier is gangsters’ wat hier onder skiet.’ (Translated: ‘Mrs, I think you must go now because there are gangsters shooting down here’)...that was a shooting that happened and as he explained to me where the shooting happened it went right over my car.”</i></p>
Implications		
Equipping the specialist occupational therapist with knowledge, skills and attitudes to address challenges facing her/him in the rural and under-resourced environments will need to be included in the curriculum. Challenges such as handling of large numbers in a sensory integration session, having to train other members of the team on sensory integration, and language barriers pose direct challenges in terms of fidelity to ASI, and the specialist MOT-SI will have to be equipped with the necessary knowledge and skills to address these realities.		
Code	Concepts	Verbatim quotations
f. Multi-membered team	<ul style="list-style-type: none"> - Inadequate levels of training - Poor managerial skills - Non-compliance with implementation of policies - High staff turnovers - NGOs having very specific outcomes - Profiles of care workers 	<p>Participant 2: <i>“We also felt that, especially in the Grade-R, children have teachers with very little training, so you know the teaching what they get is definitely also a problem.”</i></p> <p>Participant 3: <i>“...and we also saw the problem that you train all these caregivers but the high turnover of staff, like you mentioned, is immense because they get paid nothing for what they do.”</i></p>
Implications		
Working with multi-membered teams consisting of the traditional multi-disciplinary team members but could also include care workers with limited training, educators with little or no training, volunteers and community members. Building of relationships and transfer of knowledge will be of the utmost importance and related skills will need to be included in the curriculum in order to be able to deliver specialist OT-SI services.		

As is evident from the categories that emerged from the data of the focus group, there are numerous challenges facing the delivery of OT-SI services in rural and/or under-resourced environments. This focus group elicited strong statements (contributing to the six codes) from participants, as could be expected given the nature of the discussions. Verbatim quotations that strongly supported the category of 'Practising sensory integration in diverse contexts' (3.1.1) are given in Table 4.29 as examples of the thick and rich data that were obtained, emphasising some of the challenges faced in the delivery of sensory integration services

Authors such as Creek (2003 in Buchanan & Cloete, 2006, p. 74) emphasise that "the social context in which intervention occurs has an important influence on occupational therapy practice". Participants in the focus groups clearly indicated that the social environment posed definite challenges for the delivery of OT-SI services (cf. Table 4.29). This also included the physical environment. The children and their parents/caregivers were also identified as posing definite challenges (cf. Table 4.29). While working in a multi-disciplinary team is usually seen as an advantage, the reality was that in delivering OT-SI services the team would often include 'multi-members'. These could be from more than one discipline, but could also be limited to the occupational therapists delivering OT-SI services and a volunteer or care worker. The challenges were thus numerous and varied.

Research on the "implementation of the principles of primary health care in a rural area of South Africa", addressed among other factors the social as well as physical contexts (Visagie & Schneider, 2014, pp. 2, 8) of primary health care service delivery. Violence, low educational levels, language barriers, poor housing and long travelling distances were also identified by these researchers as challenges in service delivery. They strongly recommended implementing primary health care principles as a solution. This will receive more attention under the discussion of the next category of enablers (4.5.3.5.2), as it was identified by the participants of the focus group as enabling.

It is important to note that undergraduate occupational therapy students in South Africa are prepared to deliver occupational therapy services addressing all six of the codes which emerged from this focus group. The “Minimum standards for the education of occupational therapists”, as contained in the minimum standard document published by the HPSCA (Health Professions Council of South Africa, 2009, pp. 1-13), make it clear that occupational therapists should have the basic knowledge and skills needed to deliver services to diverse population groups, in diverse social and physical contexts, working in multi-professional/disciplinary teams with diverse resources. The data from this focus group highlighted the realities influencing the delivery of OT-SI services. These realities, in the opinion of the candidate, were not necessarily being dealt with at the undergraduate level, and clearly needed attention in the design of the curriculum.

4.5.3.5.2 *Category of enablers of sensory integration services in diverse contexts*

The data generated during the interviews with the occupational therapists delivering OT-SI services in rural and/or under resourced environments also contributed to a category of ‘enablers of sensory integration services in diverse contexts’. Four codes, namely ‘Supporting the community’ (a), ‘Non-governmental organisations and funding’ (b), ‘Human-resource networks’ (c) and ‘Primary health care principles’ (d) were the contributing codes in this category and are summarised in Table 4.30.

Table 4.30: Summary of enablers identified according to category codes, related concepts, verbatim quotations and implications for curriculum design

Category: Enablers of sensory integration services in diverse contexts		
Code	Concepts	Verbatim quotations
a. Supporting community	<ul style="list-style-type: none"> - Embracing help - Support from managers - Support from educators 	<p>Participant 4: <i>"...very embracing, very warm communities that they want to learn, they want help, they want to help you..."</i></p> <p>Participant 1: <i>"We have the management behind us, so that worked and we designed a play area for them and because management was behind us."</i></p>
Implications		
It will be important to focus on the possible support and support structures within a community in the curriculum to empower the specialist MOT-SI with competencies to utilise them in the delivering of OT-SI services.		
Code	Concepts	Verbatim quotations
b. NGO's and funding	<ul style="list-style-type: none"> - Funding often available - Resources available 	<p>Participant 1: <i>"So what's nice about the NGO I think they've got the most money of the three contexts because I think it's an overseas... they get overseas funding and it's really amazing the people are very dedicated and they are on the other side of the coin."</i></p>
Implications		
Knowledge on the importance of working with or in alignment with NGOs can benefit service delivery and this is an enabler that the specialist MOT-SI should be able to investigate when not employed by an NGO and should thus be addressed in the curriculum.		
Code	Concepts	Verbatim quotations
c. Human resource networks	<ul style="list-style-type: none"> - On-site contact - Buy in from community leaders - Connecting resources in community - Transfer of knowledge 	<p>Participant 5: <i>"Community worker has her container right underneath me and I met her this week. I would really like to work with her, in the community"</i></p> <p>Participant 4: <i>"You're getting everyone involved and they understand the process..."</i></p> <p>Participant 1: <i>"...but we did training with the management people as well, so that they understand what we are doing and why."</i></p>
Implications		
Knowledge and skills in creating a human resource network in rural community settings will be a crucial enabler of delivering OT-SI services and related competencies such as transfer of sensory integration knowledge and should thus form part of the curriculum.		
Code	Concepts	Verbatim quotations
d. Primary health care principles	<ul style="list-style-type: none"> - Key to delivering sensory integration services 	<p>Female 4: <i>"Those primary health care things are affordability, accessibility, sustainability, those AASS ones, I forgot what they're all are now, but</i></p>

		<i>that's our key, for me, to getting sensory integration into our communities, so how do we make it affordable, accessible, sustainable and those things.</i>
Implications		
Knowledge of the primary health care principles as prescribed and implemented in the South African context and how to apply them to ASI service delivery should be included in the curriculum.		

The first three codes all identified possible resources that could enable and support the delivery of OT-SI services in rural and/or under-resourced environments and identified knowledge and skills to be included in the curriculum. The importance of competencies related to primary health care was emphasized through the data, in the category of challenges but also in the category of enablers. Visagie and Schneider (2014, p. 2) summarise primary health care principles as including:

....equity; community participation; social and economic development; interventions focused on the determinants of poor health, health promotion, prevention, cure and rehabilitation; an integrated referral system to facilitate a continuum of care; teams of health professionals with specific and sophisticated biomedical and social skills; adequate resources; and a client-centred approach.

The above-mentioned research revealed a failure to implement primary health care principles. The researchers proposed that these principles could serve as a bridge to effective delivery of services, especially in rural environments (Visagie & Schneider, 2014, p. 10). In an article by Dookie and Singh (2012, pp. 3,4), the current primary health care approach is critiqued and a plea is made for its more effective application, together with the training and retaining of health professionals, including those in allied health professions. Taking into account the literature on primary health care and participants voicing the importance of primary health care principles in delivering sensory integration services, the candidate reasoned that competencies which allowed for the application of primary health care principles to the delivering of OT-SI services were important and were thus included in the next prototype of the curriculum.

The focus group held with occupational therapists delivering services in rural and/or under-resourced environments contributed valuable scientific data on the realities of delivering OT-SI services, knowledge that had not formally existed prior to this research. Knowing the challenges, the candidate was now able to include the necessary competencies in the curriculum, enabling its users to deliver OT-SI services in diverse contexts and in under-resourced/rural environments.

The second phase objective in this micro-cycle had two sub-objectives. The first was to obtain the views of occupational therapists delivering OT-SI services who had completed (or were in the process of completing) a master's degree in a field of occupational therapy on the challenges and opportunities they had experienced on their master's journey (Phase objective 3.2.1 cf. Table 4.27). The second was to obtain their views and opinions on prototype 2 of the curriculum (Phase objective 3.2.2, cf. Table 4.27). These findings will now be presented.

4.5.3.6 Findings of phase objective 3.2

Four occupational therapists who had completed master's degrees in the field of occupational therapy and one who was finalising her dissertation for submission agreed to take part in a focus group to discuss the challenges and opportunities they had encountered on their master's journey, as well as giving their opinions on prototype 2 of the curriculum. Although not planned, it was interesting to note that the topics of research of three of the occupational therapists were directly related to sensory integration, while a participant who did research on Kangaroo Care addressed sensory integration as part of her study (cf. Table 4.31). A participant whose topic was early intervention also included limited sensory integration in her dissertation, but not as a focus area.

Table 4.31: M. OT participants' topics of Master's degrees

Topic	Nature of Master's degree
Early intervention	Course work with research component on early intervention
Fetal Alcohol Syndrome and patterns of sensory integration Dysfunctions	Research dissertation
Premature babies and Kangaroo Care	Research dissertation with limited course work
Effect of ASI on premature babies	Research dissertation
Attention Deficit Disorders and SI	Course work with research article

All the participants were working in the field of sensory integration at the time the focus groups were held. The fact that the majority of them had also qualified with master's degrees in the field of sensory integration was an added bonus, as their contributions to the focus group could offer direct reflections on the topic of sensory integration. The total duration of the focus group was 1 hour 35 minutes.

The discussion of the findings will be presented in two parts. In 4.5.3.6.1 the findings related to stumbling blocks and contributors encountered by them on their master's journey will be given. In the second part (4.5.3.6.2), their opinions on prototype 2 of the curriculum will be presented.

4.5.3.6.1 Findings related to the challenges and opportunities experienced by occupational therapists on their masters' journey (Phase objective 3.2.1)

The first 38 minutes of the focus group were spent on obtaining ideas/opinions/perceptions on what had been experienced by the participants as stumbling blocks or contributors in their master's journeys, uncovering factors that could influence other occupational therapists in similar journeys.

The two categories that emerged from this part of the focus group were 'Threats related to master's degrees' (cf. Figure 4.9: 3.2.1.1) and 'Enablers for master students' (cf. Figure 4.9: 3.2.1.2). Seven identified codes contributed to the category of threats. Five of these

(cf. Figure 4.9: b-f) were directly related to content and delivery of programmes, while only two (cf. Figure 4.9: a & g) were related to external factors.

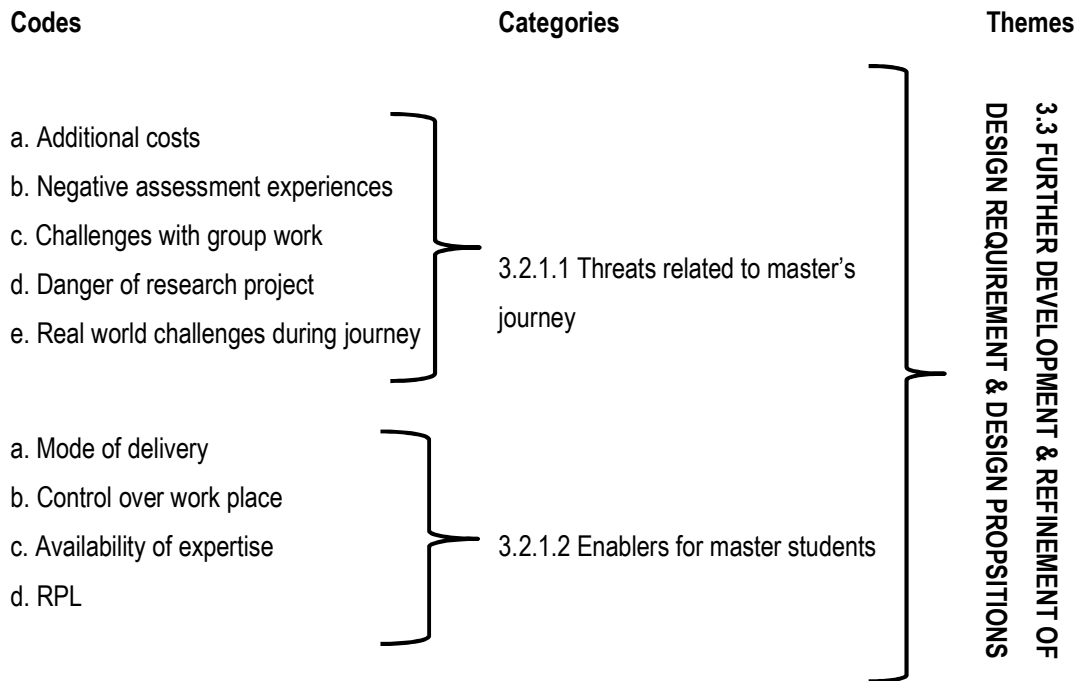


Figure 4.9: Data emerging from Micro-cycle 2, Phase objective 3.2.1 – Design and construction phase

The first category that emerged from the focus group was related to threats, which are summarised and presented in Table 4.32.

Table 4.32: Summary of threats related to master’s journey, identified according to category codes, the nature of the threat and implications for curriculum design

Category 3.2.1.1 Threats related to master’s journey	
Code	What is the threat?
a. Additional costs	Except for the cost of the qualification, the reality of lowered income due to time for studies, travelling and accommodation costs (if university is not near home) can be a threat.
Implication	
Consideration of the amount and frequency of on-campus time needs to be carefully planned considering the costs thereof for the student.	
Code	What are the threats?
b. Negative assessment experiences	The threats that emerged from the data included: b 1: Having study leader that is not an expert on the topic and directly related critique received from examiners. b 2: Use of online assessment where opinions and discussion participation are assessed and where the “eager beavers” (Participant 1) that are online as soon as the assignment opens get the highest marks as there is sometimes just so much that can be said about a topic. b 3: Group assessments on a master’s level were experienced as negative.
Implication	
b 1: The importance of availability of expertise in the field of sensory integration will be an important factor to consider in the delivery of the curriculum. b 2: Caution with online activities where assessment is involved will have to be taken, especially when it is expected from a group of students to discuss a topic or provide opinions. b 3: Limiting of group assessments on this level should be considered.	
Code	What is the threat?
c. Challenges with group work	The dynamics involved in group work were viewed as a threat in terms of personalities, and secondly the opening-up time for group work that suited all members of the group, especially when students are also working professionals and some often had additional roles of wife and mother.
Implication	
Consideration of the mentioned threats when deciding on group work and the option of limiting group work to outcomes that are also related to working within a team.	

Code	What is the threat?
d. Dangers of research projects	d 1: The first danger experienced and identified by participants was the volume of work related to the research, especially if the qualification is not research-focused. d 2: The second danger identified was doing research in the field of sensory integration with a study leader who is not an expert in the field.
Implication	
d 1: This threat has relevance for this qualification, as research will only be one of the modules of the qualification. The challenge for the design of the research module will be to contain the research component and not set expectations that are relevant for a research-focused master's degree. d 2: Ensuring availability of study leaders that are experts in the field will be non-negotiable and will need to be ensured once the delivery of the curriculum is rolled out.	
Code	What is the threat?
e. Real-world challenges during journey	Numerous threats were mentioned that impacted the journeys of the candidates. To schedule time for studies and to plan for family commitments were the major challenges shared.
Implication	
In designing a specialist master's curriculum, it could be helpful to grow a consciousness of real-world challenges identified by participants and where possible identify and prepare prospective students for these. Participants actually provided important solutions to build into the curriculum, such as to prepare students effectively when embarking on such a master's degree journey and focus on important personal attributes such as time management, organisational abilities, and make sure you are "very passionate about what you are going to do.....you have to be mentally prepared for it because it is a lot of sacrifices" (Participant 2). Including a session in the curriculum on preparing students for the journey would be of the utmost importance.	

The threats identified by participants and summarised in Table 4.32 gave the candidate insights into what could be avoided and/or addressed in the design of the curriculum.

Three of the five codes that emerged from the data were directly related to the categories and components identified in phase objective 1.2 (c.f. 4.5.1.2). These were also included in the criteria checklist for a professional master's degree developed during micro-cycle 1 of the analysis and exploration phase (cf. Annexure B). The codes of 'Challenges with group work' (c) and 'Dangers of research projects' (d) were relevant to the design of teaching and learning activities that formed part of the 'Structural elements' category, as described in 4.5.1.2.2. The 'Dangers of research projects' (d) also provided important considerations for the outcomes of the research module and was relevant to the structural

elements of the curriculum criteria checklist designed by the candidate (cf. Annexure B), specifically to 3.4 which states that “A single research or technical project or a series of smaller projects demonstrating innovation or professional expertise research comprising of at least a quarter of the total credits forms part of the qualification”. Participants specifically identified the volume of the research project and the absence of experts in the field of sensory integration as factors negatively impacting on their own journeys. The code of ‘Negative assessment experiences’ (b) had relevance for the category of assessment (cf. 4.5.2.1.1.4). ‘Additional costs’ (code a) was a threat with consequences especially for the mode of delivery and the frequency of on-campus contact time expected from students. ‘Mode of delivery’ was identified in phase objective 1.1 (cf. 4.5.1.1) as a component that needed to be addressed as part of the general information on context and conditions in the design process, and also needed further attention and clarification, as stated in 4.5.3. The code ‘Mode of delivery’ (a) emerged as an enabler of a master’s journey and will be further discussed in the next section. The code of ‘Real world challenges’ (e) was focused on preparing students for the curriculum, as poor preparation emerged as a threat to a master’s journey (cf. Figure 4.9: 3.2.1.) and thus had direct relevance for the fundamental features of the curriculum.

All of the above-mentioned implications were attended to in the design of prototype 3 of the curriculum (cf. Annexure O).

The second category emerging from this focus group was ‘Enablers for master students’ (cf. Figure 4.9: 3.2.1.2). Factors contributing to a master’s degree journey, including those that were experienced as enabling, are summarised in Table 4.33. The category of ‘enablers for master students’ which emerged from the data is presented according to the codes, the nature of the enabler, and the implications for curriculum design.

Table 4.33: Summary of enablers related to master’s journey identified according to category codes, the nature of the enabler and implications for curriculum design

Category 3.2.1.2 Enablers related to master’s journey	
Code	What is the enabler?
a. Mode of delivery	There was consensus between participants that this type of curriculum needed to be a combination of contact and distance learning due to the nature of the field of specialisation. Face-to-face contact was generally viewed as an enabler, but there was also support for distance and workplace learning. Participant 5’s verbatim quote presents a summary of the discussions providing evidence of the importance of workplace learning that cannot be achieved in a training institution setting: <i>“Can I say something? When you do your sensory integration training, there’s a certain amount of practice that you get that is done by learning to do the therapy as such”.</i>
Implication	
The curriculum needed to be designed in a mixed mode format. The five participants gave unanimous confirmation of the value of contact time but agreed that workplace experience was crucial.	
Code	What is the enabler?
b. Control over work place	The participants felt that it was important to be able to work while studying, but in such a manner that you did not feel out of control in terms of workload and curriculum expectations.
Implication	
In the design of the curriculum, work responsibilities of students needed to be considered and workplace-based learning would support this enabler if planned sensitively.	
Code	What is the enabler?
c. Availability of expertise	Having the guidance of experts in the field of study was felt to be a crucial enabler. Three of the five participants did their master’s degrees at universities where there was no expertise in the field of sensory integration, and as stated by Participant 3: <i>“I felt all the time I had to explain to them first before we could move on.....”</i>
Implication	
Ensuring the availability of experts in the field of sensory integration will be non-negotiable, meaning that, depending on the number of students, experts in the field might have to be appointed from outside the university. The number of experts in the field of sensory integration in the South African academic context is currently limited.	

Code	What is the enabler?
d. Recognition of Prior Learning (RPL)	The opinion of the participants was that the possibility of RPL would be enabling, as occupational therapists working in the field of sensory integration vary in terms of competencies and experience, since additional continuing professional development courses in the field of sensory integration are available both nationally and internationally.
Implication	
Confirmation of the possibility of RPL emerged from the data and needs to form part of the fundamental features of the curriculum.	

The first enabler that emerged from the data and had relevance for the general features of the curriculum was ‘Mode of delivery’ (a). The participants were unanimous in their opinion that a qualification for a specialist in the field of sensory integration needed a mixed-mode of delivery and that face-to-face contact was important. However, the importance of learning opportunities in the workplace was also emphasised in the discussions. These findings contributed to the decision for a mixed-mode of delivery of the curriculum.

The second enabler of ‘Control over workplace’ (b) was relevant to the component of ‘teaching and learning activities’ (cf. 4.5.1.2.4). The design of activities should be appropriate to the workplace environment and where possible contribute to the daily workload of the student. This code was important for preparing students for the curriculum (identified as one of the fundamental features of the curriculum) and its impact on their workplace.

The candidate regarded the involvement of experts in delivering a curriculum such as professional master’s degree in the field of sensory integration as non-negotiable. It was interesting to learn that three of the five participants struggled with their journey because of study leaders lack of subject expertise. The third enabler, of ‘Availability of expertise’ (c), thus not only confirmed a non-negotiable approach but also offered strong evidence which should be noted by academic institutions in South Africa where postgraduate occupational therapy qualifications are delivered.

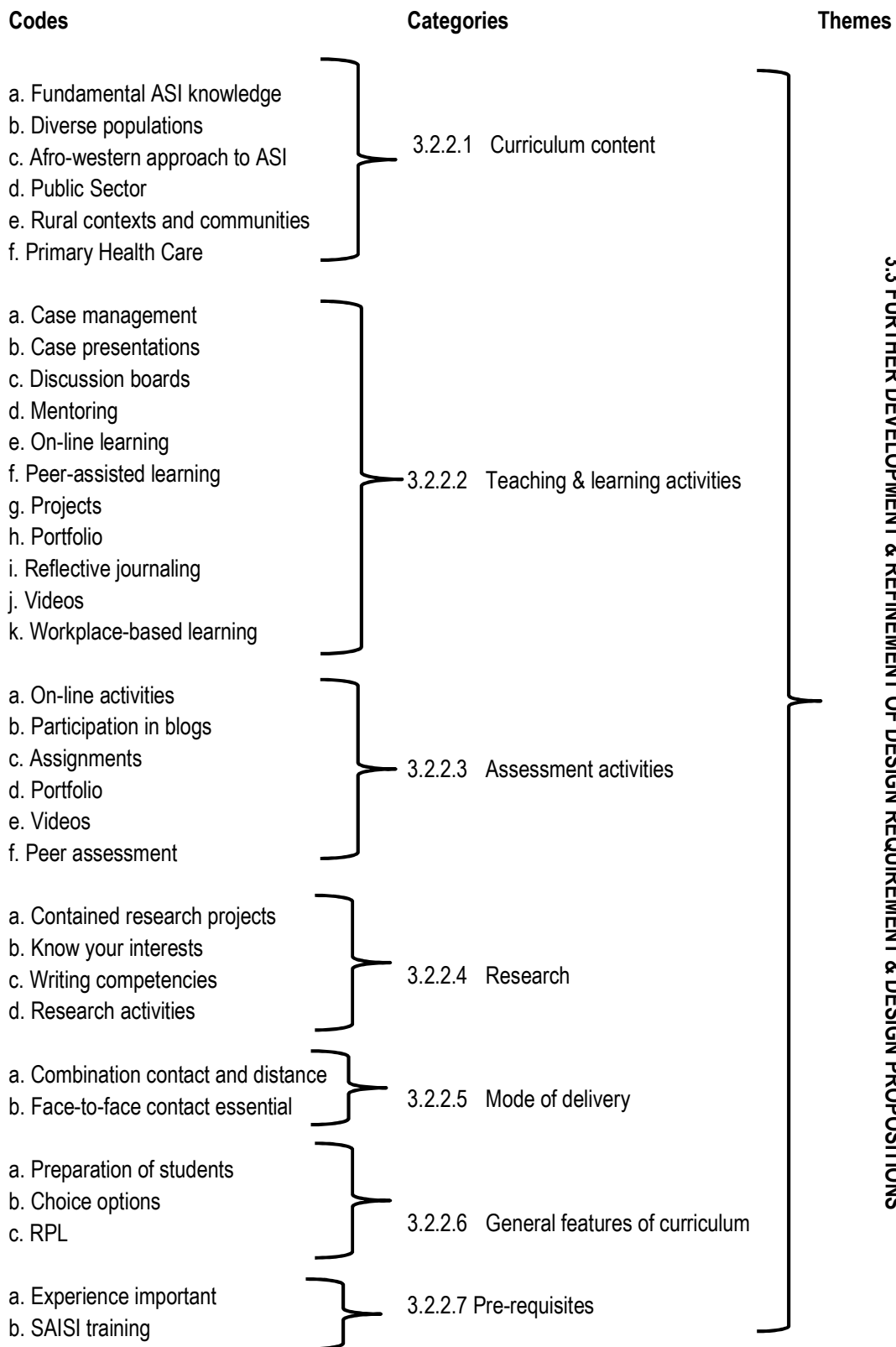
'Recognition of prior learning' (RPL) was identified as a code (d) in Micro-cycle 1, phase objective 2.1 of the Design and construction phase, contributing to the category of 'Further exploration' and identified as needing further investigation (cf. Table 4.26: Core design areas of M OT (SI), design status and actions needed after completion of the first micro-cycle in the design and construction phase). During the focus group, RPL emerged as a code contributing to the category of 'Enablers for master students' (Figure 4.9: 3.2.1.2). Participants felt that recognition of prior experience and learning would serve as an enabler in obtaining a master's degree. The chance that users with different levels of competencies would apply for this new qualification was a reality. Given the vast experience of some occupational therapists and their completion of additional training (excluding the SAISI training courses) in the field of ASI®, the inclusion of RPL as an option was therefore appropriate. This is also in alignment with the revised HEQSF which offers institutions the option of recognising "other forms of prior learning for entry or granting advanced standing in the given programmes" (Council on Higher Education, SA, 2013, p. 22), as discussed in Chapter 2 (cf. 2.4.3). Recognition of prior learning was thus included as a general feature of the curriculum in prototype 3 (cf. Annexure O). The University of the Free State recognises prior learning and has an office helping students in the RPL process (University of the Free State Recognition of Prior Learning Office, 2017). An attribute of this curriculum would then be that prospective students who had prior learning experiences in which they had gained the competencies indicated in the curriculum may be eligible for RPL. They would, however, have to go through the RPL process as prescribed by the University.

The second part of the focus group with occupational therapists who had completed or were in the process of completing master's degrees focused on obtaining their views and opinions on prototype 2 of the curriculum. The findings will now be discussed.

4.5.3.6.2 Findings on the views and opinions of M OTs on prototype 2 of the curriculum (Phase objective 3.2.2)

The discussion on the views and opinions of the participants on prototype 2 of the curriculum lasted for 67 min (excluding the time of the presentation of the curriculum by the candidate). As already noted, each participant received a hard copy of the PowerPoint presentation for reference purposes during the discussion (cf. Annexure M).

Nine categories emerged from this part of the focus group and are presented in Figure 4.10.



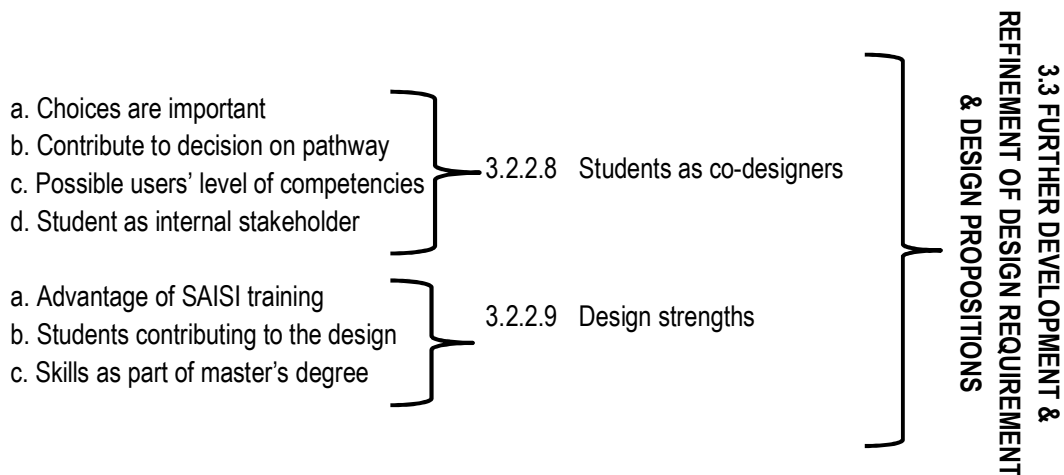


Figure 4.10: Data emerging from Micro-cycle 2, Phase objective 3.2.2 – Design and construction phase

The first category which emerged was 'Curriculum content' (cf. Figure 4.10: 3.2.2.1). During the discussions consensus was reached on the four proposed modules (1. Theoretical Foundations, 2. Lifespan Assessment and Intervention, 3. ASI and the South African Context and 4. Research Project) as presented in prototype 2 (cf. Annexure G). 'Fundamental ASI knowledge' (code a) and its application, together with 'Diverse populations' (code b) received strong support, highlighting their importance and reinforcing competencies already identified by the international experts in ASI during micro-cycle 1, phase objective 1.3 (cf. 4.5.1.3.4). The code of 'Afro-western approach to ASI' (c) gave added support to the category of 'Competencies' which had already emerged from micro-cycle 1 of the design and construction phase, phase objective 2.1 (cf. 4.5.2.1.1.4.1), where the competencies needed to deliver ASI® services in the South African context had not only contributed to the design of the curriculum but were also included in the Model of Competencies (cf. Figure 4.7). The codes of 'Public sector' (d) 'Rural contexts and communities' (e) and 'Primary health care' (f) were also relevant to the South African context and thus supported previous findings. The data contributing to this category also confirmed the candidate's own reasoning on themes and supported the modules as included in prototype 2 (cf. Annexure G). For the purpose of the design, the content of the module on ASI® and the South African context was revised and expanded (cf. Annexure O: Prototype 3 of curriculum) to ensure the inclusion of codes a-f.

The category of 'Teaching and learning activities' (Fig 4.10: 3.2.2.2) was similar to categories already identified in micro-cycle 1 of the analyses and exploration phase, phase objective 1.3 ('Teaching and learning experiences': cf. 4.5.2.1.1.4.2) and micro-cycle 1 of the design and construction phase, phase objective 2.1 ('Teaching and learning activities': cf. 4.5.2.1.1.4.3). Although eleven codes were identified (a-k, Figure 4.10), no new teaching and learning activities emerged, pointing to a possible saturation point of teaching and learning activities in the curriculum. These findings, together with the results of phase objective 2.2 (cf. 4.5.2.1.2.1) on SAISI-trained occupational therapists and their perceived levels of competencies and satisfaction with their learning experiences gained through the SAISI training courses, were considered in the activities included in the further design of the curriculum. The results on those learning experiences that contributed most to competencies gained during SAISI training courses (cf. 4.4.2.2.7.4) indicated that live demonstrations and case studies were considered the most valuable and were taken into account in the design process.

One teaching and learning activity that did not emerge from the data but is available at the University of the Free State, was simulation activities. As a lecturer at a university where the School for Allied Health Professions has the privilege of having a custom-designed Clinical Skills Unit (CSU), the candidate was aware of the possibilities a CSU could offer in the design of a curriculum. According to Jones, Passos-Neto, and Braghiroli (2015, p. 56) simulation-based education "provides a safe, controlled environment", in which high-level competencies can be attained. A systematic review performed on 23 studies where simulation was used, as opposed to other education and training methods, showed an increase in clinical skills in most of the studies. In 10 of these studies, "practising health care professionals" were involved, thus also representing a postgraduate population (Harder, 2009, p. 26), of relevance to the population for which the curriculum in this study was designed.

Possibilities for the design of the proposed curriculum thus included the simulation of real-world intervention settings that could incorporate an intervention room adhering to the ASI®-Fidelity Measure (May-Benson, et al., 2014, p. 509) or to simulate an environment

that is representative of third-world realities in which students must plan and present intervention sessions. A further possibility would be to have standardised “patients” (Jones, Passos-Neto, & Braghiroli, 2015, p. 57) who would be included in live demonstration sessions or “intervention” sessions, without the threat, for example, of disorganising a sensory-sensitive child during intervention. An example would be where a typical developing child enjoying sensory experiences would be selected and “trained” to be a standardized “patient” replicating a predetermined sensory issue. In summary, simulation offers opportunities to copy real-life situations, in which students not only gain experience without the risk of causing harm but are also given opportunities for debriefing and feedback after a session (Jones, Passos-Neto, & Braghiroli, 2015, p. 58). The candidate therefore included simulation as a teaching and learning activity in the design of prototype 3 of the curriculum (cf. Annexure O).

The third category of ‘Assessment activities’ (Figure 4.10: 3.2.2.3) identified was a similar category also already identified in Micro-cycle 1 of the Design and construction phase, Phase objective 2.1 (‘Assessment’: cf. 4.5.2.1.1.4.3). Although six codes contributed to this category, the only new assessment activity that emerged was that of ‘Peer assessment’ (code f), which also pointed towards possible saturation.

At this stage it became clear that the collective contributions of three data-generating activities, Micro-cycle 1 of the Design and construction phase, Phase objective 2.1 (‘Teaching and learning activities’: cf. 4.5.2.1.1.4.2), Micro-cycle 1 of the Design and construction phase, Phase objective 2.1 (‘Assessment’: cf. 4.5.2.1.1.4.3) and the data-generating activity under discussion all pointed towards the use of peer learning. This is well described in the literature and can take on various forms or models. Boud defines peer learning as “...students learning from and with each other in both formal and informal ways” (Boud, 2001, p. 10). Although the strengths and value of peer learning were not explicitly mentioned by the participants, the literature is clear on the advantages of such learning. It allows for “critical enquiry and reflection” and according to Boud (2001, p. 14) the evidence suggests that this happens “more readily” when there is interaction between peers. An aspect of developing the competency of clinical reasoning is that of critical

enquiry and reflection. The candidate knew from her involvement with SAISI training courses that course participants struggle to gain the confidence needed to critically enquire and/or reflect. Peer learning could foster these competencies, especially as the literature confirms that students are “more open to be critiqued by peers” than by lecturers (Boud, 2001, p. 14). One of the competencies identified by the international experts in sensory integration (cf. Figure 4.3: Category 1.3.1.2, Teaching and learning experiences of phase objective 1.3, micro-cycle 1 of the analysis and exploration phase) was the skill to teach and argue on sensory integration dysfunctions and neuroscience. Peer learning offers opportunities to foster these skills. Peer assessment, already discussed in this section as one of the codes of the category ‘Assessment activities’ (cf. Figure 4.10: 3.2.2.3 (f)), forms part of peer learning and provides an opportunity for formative assessment in a non-threatening environment. According to Boud (2001, p. 15), peer assessment can often have a stronger imprint on professional work than other formal types of assessments. Formalised peer learning could thus be a valuable activity to include in the curriculum.

Four codes emerged from the data contributing to the category of ‘Research’ (Figure 4.10: 3.2.2.4). Code (a), ‘Contained research projects’, received a strong recommendation from the participants, although it was felt that this was a component of a modular master’s degree which had the potential to get out of hand, as it matched the ‘lived experiences’ of some of the participants. Three possible research activities were included in Prototype 2, those of case studies, product design and theory development (cf. Annexure G). Although theory development did elicit some discussion, case studies and product design received support from all five of the participants.

‘Mode of delivery’ (Figure 4.10: 3.2.2.5) was identified in phase objective 3.2.1 as one of the codes contributing to the category of ‘Enablers for master students’ (cf. Figure 4.9: 3.2.1.2). During this part of the focus group, ‘Mode of delivery’ emerged as a category with two contributing codes, ‘Combination contact and distance’ (a) and ‘Face-to-face contact essential’ (b). This code had already emerged during Micro-cycle 1, phase objective 2.1 – Design and construction phase, as contributing to the category of ‘Further

exploration' (Figure 4.6: 2.1.5). Participants once again confirmed the importance of face-to-face contact time, but opportunities to learn in their own working environment were also highlighted. This data thus supported a decision already made, to use a blended mode of delivery for the curriculum.

A category of 'Prerequisites' (Figure 4.10: 3.2.2.6) emerged when the newly established international guidelines for education came under discussion, confirming the prerequisite already included under general information on the curriculum (cf. Annexure G, General information, prototype 2 of the curriculum). As already noted in 4.5.2.1.2.5.2, under 'Results on perceived knowledge and skill levels after completion of SAISI courses', and taking into account the levels of the "proposed pathways to expertise in ASI" as established by ICEASI (Baltazar Mori, et al., 2017, p. 10), a practitioner entering at a master's level would already have obtained basic competencies in ASI® assessment and intervention. These competencies are currently obtained during completion of the SAISI's four training courses on assessment and intervention in ASI (South African Institute for Sensory Integration, 2014), and are thus set as a prerequisite for this master's qualification. Due to the structure and assessment activities involved in the SAISI courses, the shortest time in which the training could be completed is two and a half years, meaning that by the time an occupational therapist entered this new professional master's qualification he or she would already have a minimum of at least three years' experience.

The eighth category that emerged was 'Students as co-designers' (Figure 4.10: 3.2.2.7). Four codes contributed to this category. The possibility of choices and the discussion surrounding them led to the first code of 'Choices are important' (a). Choices were seen in terms of focus of assignments, that is, the type of diverse populations to be included in the case load of the student, and choices on environments where practical work was to be undertaken. The focus of discussion then shifted to the possibility of the students themselves contributing to decisions on their teaching and learning pathways. This resulted in the emergence of the second code, identified as 'Contribute to decisions on pathway' (b). Participants not only felt strongly about the option of having choices but

discussion on ways in which students could contribute to decisions on their learning pathways inspired a verbatim quote that summarised the content of the discussions:

Participant 5	<i>"You actually could build yourself up to end up with a master's that was functional for you in the end and not just a bit of paper"</i>
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The candidate therefore added a code of 'Possible users level of competencies' to this category. As already noted, possible users may have a minimum of three years' experience. However, they could also have many years of extensive experience, and in this case, would be well positioned to contribute to decisions on, for example, components of assignments, practical experiences and WIL.

The fourth and last code in this category of 'Students as internal stakeholders' (d) was in support of current views in the literature, prominent among which were those of Van den Akker, also indirectly supported by codes (a) and (b). Van den Akker writes on blending perspectives by integrating different "trends and characteristics of recent design and development approaches" (pragmatism, prototyping communication and professional development) when developing curriculums (Van den Akker, 2013, p. 61). When students become internal stakeholders of their learning process and learning opportunities, this will, in the words of Van den Akker, be an acknowledgement that "the practical context and its users are in the forefront of curriculum design and enactment" (Van den Akker, 2013, p. 63). The possibility of engaging students as co-designers is strengthened by the fact that, according to the results of the quantitative questionnaire (cf. 4.5.2.1.2.5.1, Demographic results), users of the curriculum could range from occupational therapists with a minimum of three years postgraduate experience to those who have as much as 30 or more years of experience. It will be possible to engage students in an academic mentoring relationship in which cases and content of assignments could be 'designed' to fit the need and profile of the student, taking into account previous experience and real-world practice needs. Students contributing to decisions on their pathway would serve as a unique feature of the designed curriculum and would also support a communicative-relational style as part of a blended approach used in the design. Collaborative decisions would be made between stakeholders, with the aim of optimising the learning experience

(Van den Akker, 2013, p. 63). In 2008, Aaron Porter, the then President of the National Union of Students (UK), made the following appeal, included in a publication produced by the Quality Assurance Agency for Higher Education, UK, on “Rethinking the values of higher education - students as change agents?” (In Kay, Dunne, & Hutchinson, 2010, p. 1): “I ask you to begin to explore, within your own context, new ways to engage students in their learning, to involve students in your internal quality assurance systems, and in the design and planning of courses”. The candidate believed that the design of this curriculum as it was evolving answered to this appeal. The data obtained from this specific micro-cycle confirmed the importance of including students as co-designers, either those who have already gone through the process by being involved in the design of a curriculum, such as this one, or those who have been allowed to enroll for the curriculum within limits, to co-design learning experiences and/or assignments.

The ninth and last category that emerged from this focus group was ‘Design strengths’ (cf. Figure 4.10: 3.3.3.9). This category already emerged in micro-cycle 1, phase objective 2.1 – Design and construction phase (cf. 4.5.2.1.1.4.6). New design strengths emerged from this data. Participants felt that the fact that students would already have completed the SAISI training courses (set as prerequisite cf. Figure 4.10: category 3.2.2.7) when enrolling for this master’s degree would impact on how the curriculum was designed. Outcomes are, among other factors, aimed at the student becoming a master in competencies related to ASI[®] assessment and intervention, with the basic competencies already attained during the SAISI courses. This contrasts with the master in sensory integration course currently presented at Ulster University (cf. 4.5.2.1.1.4.5), where assessment and intervention are included as part of the master’s degree. These discussions generated data identifying the code of ‘Advantage of SAISI training’ (a). The second code identified was ‘Students contributing to design’ (b). The participants felt that if students could contribute to the design of teaching and learning activities this would be a major strength. The general experience with modular master’s degrees was that one might have choices on modules but not on aspects such as the content of assignments, type of cases, or workplace-based activities. Taking the student’s real-world context and experience into consideration was commended. The last code to be identified for this

category was that of ‘Skills as part of master’s degree’ (c). To gain clinical skills that would assist the student in becoming a master clinician was also considered a strength of the curriculum. A quote from one of the participants is a fitting reflection on the views of the participants:

Participant 2	<i>That was one of the reasons why I never wanted to do a master’s while I was in private practice. Because I thought I need skills. I don’t need to focus on this one topic only. So that’s an excellent idea, I think.</i>
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It was again valuable to hear the opinions of the participants on the curriculum as it was at that stage of the design. The excitement experienced at the prospect of such a curriculum was reflected in the words of one of the participants:

Participant 5	<i>Can we do our master’s again? And have a second master’s!..... We are going to be the first guinea pig with this master’s.</i>
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The discussion of category nine concludes the findings emerging from the focus group held with occupational therapists who had completed master’s degrees in the field of occupational therapy.

4.5.3.6.2.1 Possible use of Model of Competencies (M OT (SI)) as monitoring tool

The design of the Model of Competencies and its use during the design process were experienced as an “assistive tool” by the candidate. As the research process evolved (together with the curriculum), she started reasoning on the possibility of using the Model of Competencies as a personal monitoring tool for enrolled students. A possible approach would be that students, in their first consultation with their academic mentor, would colour-code the Model of Competencies according to their own perceived levels of the competencies indicated on the model. Competencies that they saw as good could be marked in green, those in development could be marked in orange, and those still to be developed could be marked in red (robot system). This would give both the student and the mentor a visual ‘barometer’ of the student’s competencies. As the curriculum progressed, the Model of Competencies could be ‘updated’ with the ultimate aim of having all the competencies marked in green as the student exited the qualification. In discussion

of assignments, projects and cases, the coloured model could be used to guide competencies that needed additional attention, helping the student in the learning experience and also in taking responsibility for her/his own learning. The student would be cognisant of which competencies were not yet achieved, while “celebrating” those which had been attained. Using this model actively during the master’s journey would include the student as an internal stakeholder, a category that emerged during this micro-cycle and was discussed above. Although not formally part of the components currently included in the design of the curriculum, this is a tool that will be considered once the curriculum is rolled out.

4.5.3.7 Conclusion of Design and Construction Phase: Micro Cycle 2

The overall aim of this micro-cycle was to expand and refine the curriculum in order to arrive at Prototype 3. Two phase objectives were set to reach this aim. The first was to obtain the views and opinions of occupational therapists who delivered OT-SI services in diverse and under-resourced environments. The second objective comprised two sub-objectives. These were, firstly, to obtain the views of occupational therapists delivering OT-SI services who had completed (or were in the process of completing) master’s degrees in any field of occupational therapy on the challenges and opportunities they had experienced on their master’s journey, and secondly to obtain the opinions of the same participants on prototype 2 of the curriculum.

The findings from this cycle led to a further refinement of the Model of Competencies (cf. Figure 4.11). Competencies were refined in all three domains of knowledge, skills and attitudes based on the findings from this micro-cycle. This was done, for example, by changing the level where they were placed, by rephrasing some of the competencies to increase accuracy, or by combining competencies that were similar.

MODEL OF COMPETENCIES FOR M OT(SI)

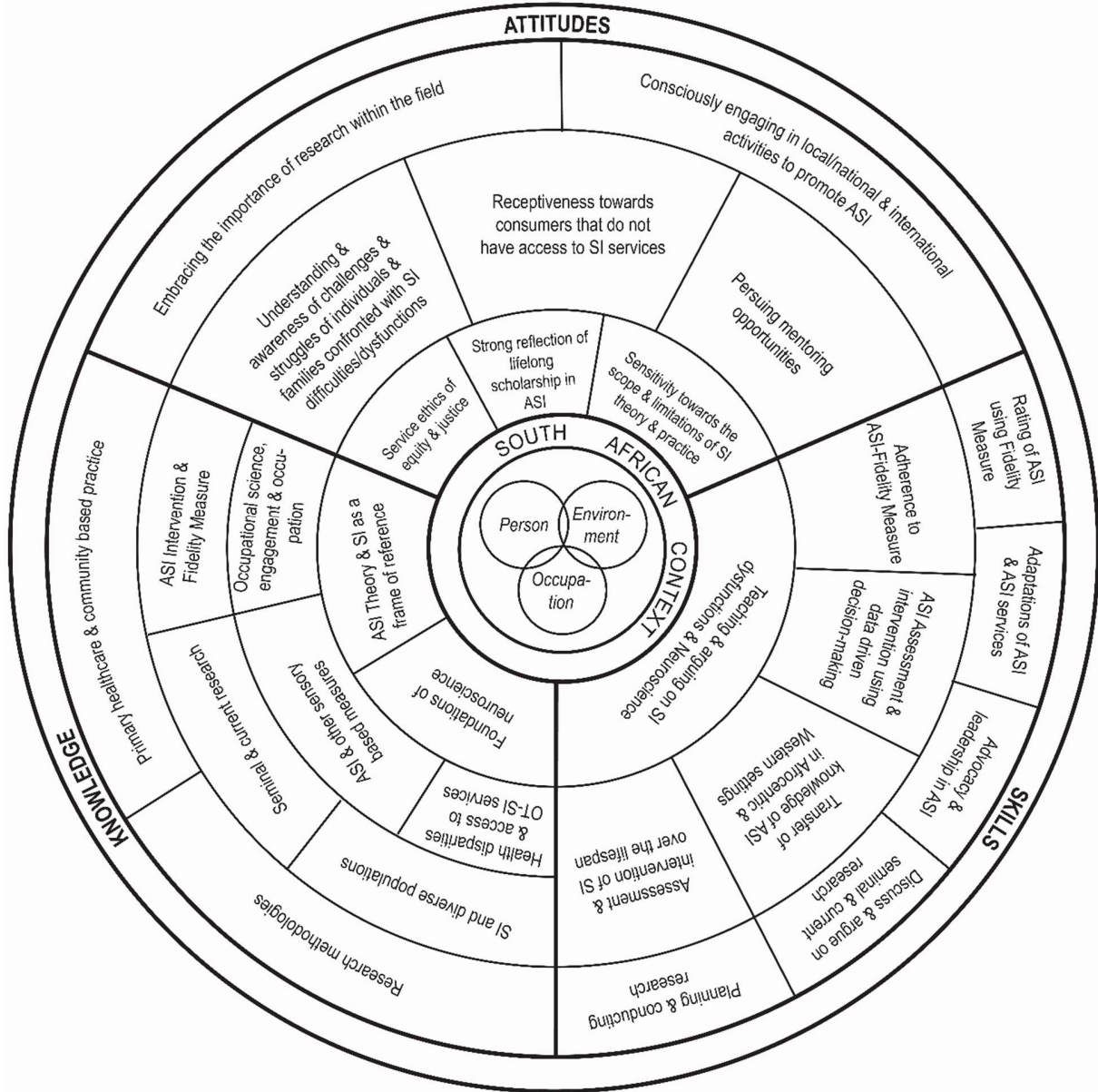


Figure 4.11: Third and final version of Model of Competencies

A skill competency, 'Transfer of knowledge of ASI® in Afrocentric and Western' settings, was added to the model, as well as a knowledge competency on 'Primary health care and community based practice'. Version 3 of the Model of Competencies for M OT (SI) is given in Figure 4.11. The candidate also ensured that all competencies included in this model were answered to in the outcomes by cross-checking the model with the curriculum.

Prototype 3 of the curriculum reflects the changes and additions made as a result of the findings of this micro-cycle (cf. Annexure O, Prototype 3 of the curriculum). In the first section, describing the qualification outcomes, only one outcome was refined, by changing the verb "demonstrate" to "foster". In the general information supporting the curriculum, information on the 'prerequisites', 'delivery mode', and 'assessment' was retained, added to and refined. A new section on 'fundamental features' of the curriculum was added; this contained data on learning experiences, mentoring, the research project, and 'students as co-designers'.

The modules remained consistent between prototypes 2 and 3, as there were no findings indicating the need for change. Changes were however made to one of the module's outcomes and two of the specific module outcomes (cf. Annexure O, Prototype 3 of the curriculum). In the module 'Lifespan assessment and intervention', simulation activities were added as teaching and learning activities (cf. Annexure O, Prototype 3 of the curriculum, Module 2: Specific outcomes). In module 3, 'ASI® and the South African context', applying primary health care principles, was added as an outcome, with the evidence for this reflected in the teaching and learning activities and the relevant assessment (cf. Annexure O, Prototype 3 of the curriculum, Module 3: Module outcomes and Specific outcomes). Limited refinement in terms of the use of language was done throughout the documents.

4.5.3.8 Phase objective 3.3: Further development and refinement of design requirement and design propositions

The final objective of the current micro-cycle was to further develop and refine the design requirements and propositions. Concluding micro-cycle 1 of the design and construction phase, the design requirements and design propositions comprised one requirement and one proposition (cf. Table 4.25). During the previous micro-cycle, the richness of the process and the realities faced contributed to additional design requirements and design propositions, and these are presented in Table 4.34.

Table 4.34: Design propositions and design requirements derived thus far

Design requirement 1	All qualification and curriculum components must be supported and guided by the relevant statutory and institutional documents as they provide the structure, limits and expected requirements for the design of a curriculum.
Design proposition 1	International and national expertise should be consulted in identifying core competencies to be included in the design of a specialist curriculum.
Design requirement 2	<i>To construct a professional master's degree in occupational therapy the following need to be identified and/or developed:</i> <ul style="list-style-type: none"> • <i>qualification requirements,</i> • <i>outcomes pertaining to the qualification,</i> • <i>identification of modules and relevant themes</i> • <i>outcomes pertaining to modules and specific learning outcomes for each module that are anchored in the relevant level descriptors,</i> • <i>Assessment activities indicating underpinning competencies and standards against which they will be assessed.</i>
Design proposition 2	<i>In order to develop outcomes, relevant teaching and learning activities need to be identified that will support/foster the identified competencies.</i>
Design proposition 3	<i>Include stakeholders such as clinicians or possible users of the programme to obtain the real-world challenges in the delivery of specialised services.</i>
Design proposition 4	<i>Obtain feedback from stakeholders in order to refine or expand on aspects of the curriculum in design</i>
Design requirement 3	<i>For delivering AS[®] services in diverse South African environments teaching and learning activities need to be identified, tailored and included in the curriculum that would foster unique competencies to serve those involved.</i>

Two additional design requirements (Design requirement 2 & 3) and three design propositions (Design propositions 2,3, & 4) emanating during the second micro-cycle of the design and construction phase were added and are presented in italics in Table 4.34. Current ASI® training courses do not uniquely equip students with the relevant competencies, such as adapting assessment, equipment and intervention, to provide for the sensory integration needs of those involved in diverse settings. Teaching and learning activities that would foster such competencies, enabling students to deliver ASI® services in diverse environments, were therefore included as a design requirement.

4.5.3.9 *Conclusion of second micro-cycle of the design and construction phase*

The findings of this second micro-cycle in the design and construction phase helped the candidate to further expand and refine the curriculum, arriving at prototype 3 (cf. Annexure O). The Model of Competencies was also further refined (cf. Figure 4.11) allowing the candidate to deduct an additional design requirement and three additional design propositions (cf. Table 4.34) from the data generated during this phase.

An update of the core design areas of M OT (SI), design status and actions needed after completion of the second micro-cycle in the design and construction phase is given in Table 4.35.

Table 4.35: Core design areas of M OT (SI), design status and actions needed after completion of the second micro-cycle in the design and construction phase

Core design areas	Status	Actions needed
Core competencies to be attained	Data used to finalize the Model of Competencies	Resubmission to international experts for their opinion and to serve as member checking
Curriculum and components		
a) Qualification and outcomes	Refinement of curriculum outcomes was done.	Obtain opinions of curriculum experts
b) Modules	Modules finalized.	Obtain opinions of curriculum experts.
c) Module themes	Finalized.	Obtain opinions of curriculum experts.
d) Module outcomes	Addition made to one of the modules.	Obtain opinions of international experts and curriculum experts.
e) Module specific outcomes	Refined and minimal additions made to two of the modules.	Obtain opinions of international experts and curriculum experts.
f) Teaching and learning activities	Activities added in line with additional outcomes.	Obtain opinions of international experts and curriculum experts.
g) Assessment and description	Developed and added.	Obtain opinions of curriculum experts.
General information on context and conditions of curriculum	Extended and added to general features of curriculum.	Obtain opinions of curriculum experts.

In comparison with the previous phase, the amount of design and construction needed on prototype 3 of the curriculum was limited. The candidate decided to complete the criteria checklist for a professional master's degree that she had compiled as part of Objective 1.2 (cf. 4.5.1.2) as a quality insurance activity and to ensure that all the criteria were included in the curriculum (cf. Table 4.36). The completed checklist, depending on the results, would also be of help in deciding on activities for the third micro-cycle of the design and construction phase.

Table 4.36: Completed criteria checklist for a professional master’s degree

CRITERIA CHECKLIST FOR A PROFESSIONAL MASTER’S DEGREE		
Does the designed curriculum adhere to the criteria?		Y/N
1. Qualification requirements		
1.1	Degree describes the broad fields of the programme.	Y
1.2	If relevant a maximum of one specific qualifier is added.	Y
1.3	Qualification have a minimum of 180 total credits.	Y
1.4	Credit allocation is done in terms of modules, mounting up to the total qualification credit.	Y
1.5	Qualification is professionally-orientated, geared towards high-level cognitive engagement to advance knowledge towards a profession and specialised services as stipulated in NQF Level 9 for a professional master’s degree.	Y
2. Outcomes pertaining to the qualification		
2.1	Curriculum is designed according to an outcomes-based approach.	Y
2.2	Generic learning outcomes of the curriculum are aligned with the NQF level 9 and its qualification descriptors.	Y
2.3	Specific learning outcomes are compared to and anchored in the relevant level descriptors.	Y
2.4	States the learning that is necessary to achieve the intended outcomes.	Y
2.5	Required competencies are reflected in the learning outcomes.	Y
2.6	Outcomes are clear, there is alignment between outcomes, exit level, and teaching and learning activities.	Y
3. Structural elements		
3.1	There is alignment and internal consistency between curricular components.	Y
3.2	Curriculum is ‘built’ considering the local context and is relevant for service delivery needs of the country.	Y
3.3	Work-integrated learning forms part of learning experiences.	Y
3.4	A single research or technical project or a series of smaller projects demonstrating innovation or professional expertise research comprising of at least a quarter of the total credits forms part of the qualification.	Y
4. Assessment		
4.1	NQF Exit Level 9 outcomes guide the specific outcomes and assessment developed for the curriculum.	Y
4.2	Types of assessment needs are identified and integrated into the curriculum.	Y
4.3	Underpinning competencies that will be assessed are integrated in the specific outcomes.	Y
4.5	Standards guiding learning and assessment are reflected in the outcomes to serve as assessment criteria.	Y
4.6	Types of assessment needs are identified and integrated into the curriculum.	Y
4.7	Expected standard of performance, quality and where relevant the context and conditions are described.	Y
4.8	Assessment is inclusive of a range of assessment activities.	Y
4.9	Clarity in terms of assessment and assessment activities exists.	Y

With the completion of the checklist, all the criteria stipulated were included in the curriculum at that stage. Given the limited changes made after the previous micro-

cycle of design and construction and the checklist results, the candidate reasoned that prototype 3 was ready to be submitted to curriculum experts for their views and opinions. Additionally, she decided to submit prototype 3 to the ASI® experts lecturing internationally who had also participated in the first micro-cycle of the analysis and exploration phase. They were approached specifically for their opinions on the competencies and teaching and learning activities included at that stage in the curriculum. This also served as a form of member checking to ensure that the original competencies identified by them were represented in the latest version of the curriculum. It was important to ensure that it still met the expectations of international experts involved in training on an international level.

4.5.4 Design and Construction Phase: Micro Cycle 3

With the third micro-cycle of the design and construction phase, the curriculum entered a final phase of design and construction. The candidate argued that it would be valuable to obtain the opinions/suggestions of international experts in ASI® now that the curriculum had reached an advanced stage of design. She also knew that in this final phase of the design and construction process, the opinions of curriculum experts would be important as they would be able to offer very specific information on the curriculum and whether it adhered to the criteria set by the CHE.

Table 4.37 gives a summary of the aim and objectives for what became the final phase of this research.

Table 4.37: Aim of the phase, phase objectives, activities and sources for the design and construction phase - micro-cycle 3

4. Design and Construction Phase: Micro Cycle 3			
Aim of the phase: To obtain conclusive opinions/suggestions from experts to finalise and arrive at the final intended and internationally acknowledged curriculum.			
Phase objectives	Activities	Sources	
4.1 To obtain opinions/suggestions, confirming the inclusion of the initially identified competencies of the international ASI® experts.	a) Contact experts via e-mail and request a second round of participation.	Two international experts in ASI® who are also presenting international training courses in ASI®.	4.3 To finalise existing design requirements and design propositions and identify new
4.2 To obtain the opinions of curriculum experts on prototype 3 of the designed curriculum.	a) Identify individuals with curriculum expertise in the field of postgraduate curriculums. b) Contact experts via e-mail and request their willingness to provide expert opinions on prototype 3 of the designed curriculum.	Curriculum experts at higher education institutions with experience on post graduate curriculum development/design.	

An important objective of this phase was to finalise the design requirements and design propositions for the study (Table 4.37, Phase objective 4.3). Once finalised, these would present the theoretical understandings that had emerged from this research and would hopefully offer “building blocks of theory” for future use (McKenney & Reeves, 2012, p. 37).

The activity in phase objective 4.1 (cf. Table 4.37) generated much less “data” for analysis, and the activity for phase objective 4.2 (cf. Table 4.37) also produced condensed and different types of information. The candidate therefore decided to handle these as evaluation activities, not as ‘data-generation’ activities. Each objective will thus be discussed under a subheading, giving information on the activity involved, the information obtained, and how it was used in the final refinement of the curriculum.

4.5.4.1 Phase objective 4.1: Obtain opinions/suggestions, confirming the inclusion of the initially identified competencies of the international ASI® experts

The international experts in ASI® who had participated in objective 1.3 of micro-cycle 1 (cf. 4.5.1.3) of the initial design and analysis phase were now asked to give their opinions/suggestions on prototype 3 of the curriculum. The candidate knew that their opinions could also serve as a form of member checking. It was important to verify whether the initial competencies identified by the international experts and presented in prototype 3 could still, in their opinion, be included/represented, as this would add to the trustworthiness of the study (Guba in Shenton, 2004, p. 68). It was also important to ensure international acknowledgement, as one of the aims of the study was ‘to design a curriculum, relevant to the South African context *but internationally acknowledged*’ (cf. 3.4). The best candidates to offer opinions, or further suggestions, on whether the curriculum would meet international standards were ASI® experts who were lecturing on international courses and who had the best knowledge and experience on the international landscape of ASI® training. The candidate therefore decided to approach two of the initial international participants for a second time, as they met this criteria, requesting their willingness to give their opinions on whether they were satisfied that the initial competencies they had provided in the e-mail interview during the first micro-cycle were still included/represented in prototype 3 of the curriculum.

The two international ASI® experts were contacted by e-mail and confirmed their willingness to take part in a second round and to give their opinions on prototype 3 of the curriculum. Along with an information document (cf. Annexure P), they were provided with prototype 3 of the curriculum (cf. Annexure N), a single page copy of the third version of the Model of Competencies (cf. Figure 4.11), and the relevant Word documents containing their individual opinions of the initial email interviews on the competencies and learning experiences (cf. 4.5.1.3, phase objective 1.3).

As already stated, the feedback from both the international experts was positive, with a few additional comments. In the blocks below their verbatim opinions are recorded:

International Expert 1	<p><i>This is an extensive curriculum that will certainly build expertise.</i></p> <p><i>The content is quite wonderfully comprehensive. I like the inclusion of mentorship in the curriculum.</i></p> <p><i>Formalizing this process will certainly add to the competencies of the learners.</i></p>
International Expert 2	<p><i>The model and design process for the curriculum looks very solid and impressive!</i></p>

International expert 2 did have a few suggestions concerning the refinement of the qualification’s outcomes and these were added to the final intended curriculum (cf. Annexure R (changes were made in light grey and italics)). No additional competencies were identified and there was agreement on the competencies included in prototype 3.

4.5.4.2 Phase objective 4.2: Obtain the opinions of curriculum experts on prototype 3 of the designed curriculum

Before the curriculum experts were approached, the candidate had decided to provide guiding questions on those aspects of the curriculum on which she reasoned it was important to obtain opinions. In the literature review, attention was given to relevant perspectives on curriculum and curriculum development (cf. 2.6.1.) and the relevance of educational design research and curriculum design/development (cf. 2.7). On the reviewed literature, the question that was posed was: What criteria would be relevant when a curriculum is being reviewed/evaluated/critiqued that would guide the curriculum experts and that could serve as confirmation of the designed curriculum? In the South African CHE’s accreditation criteria for new programmes, the section on programme design gives definite guidelines on the minimum requirements for programme design (Council on Higher Education, 2004, pp. 6-8) The criteria include intellectual credibility, coherence, articulation, mode of delivery, outcomes, identified expected competencies, teaching and learning activities, and assessment. The document on “A Framework for Qualification Standards in Higher Education” (Council on Higher Education, 2011, pp. 11-13,17,18) also gives information guiding the setting of standards and the National Qualification Framework’s level descriptors, as well as the role of professional bodies. A further guiding document in identifying criteria to provide to curriculum experts was the

HEQSF (Council on Higher Education, SA, 2013, p. 34). Five guiding questions were formulated to be posed to the experts in order to obtain their opinions on prototype 3. The questions were included in the letter sent to them by e-mail (cf. Annexure Q, Letter to curriculum experts):

1. Your opinion on the designed curriculum and its alignment with level 9 qualification descriptors for a professional master's degree?
2. Your opinion on the clarity of the outcomes?
3. Your opinion on whether the described teaching and learning activities will assist in the development of competencies?
4. Your opinion on the assessment activities and their relevance?
5. Any other comments regarding the curriculum in design?

The initial plan had been to seek the opinion of at least three experts in the field of postgraduate curriculum development or design. However, it was decided, in consultation with the promoters of this study, to only request the opinions of South African experts, given that South Africa had its own unique higher education qualification framework and standards. This task became more cumbersome and time-consuming than originally expected. Four possible experts were originally identified with the help of the candidate's promoters. Two were from the University of the Free State and two from other universities. Three of the four declined the invitation to participate because of workloads, and one did not respond at all, even though three follow-up e-mails were sent. One suggested another expert in her faculty, and this person was approached and accepted the invitation. Three new experts were identified and contacted, but also declined for reasons varying from workload to not being expert in postgraduate curriculum development. Having one curriculum expert from another university but in the profession of occupational therapy was considered an advantage, although she declared that she was not knowledgeable in the field of sensory integration. It may be relevant to state that there were no curriculum experts in South Africa who were also knowledgeable in the field of sensory integration and who could be approached for possible participation. A decision was made to contact a curriculum expert with an educational background who was from the University of the

Free State, at one of the satellite campuses, but who also served on the CHE curriculum accreditation board. After the time available to find curriculum experts willing to participate had lapsed, it was decided to conclude with the two experts, especially given the range of expertise that they brought to the table.

After they had declared themselves prepared to take part, an e-mail was sent to them containing an information letter (cf. Annexure Q), a single page of the Model of Competencies as presented in Figure 4.11 and prototype 3 of the curriculum (cf. Annexure O).

On receiving their responses by e-mail, the candidate discovered that the presentation of opinions of the two experts differed considerably. Expert 1 gave point-by-point comments and suggestions. She used a more analytical approach which offered insightful comments and recommendations. Expert 2 gave her opinion in a more qualitative manner. The differences between the presentation of these opinions was a main reason why the candidate decided to handle the feedback in an evaluative manner, as opposed to analysing the 'data', as had been done with the e-mail interviews with the international experts in ASI® in the first round of data generation (cf. 4.5.1.3, Objective 1.3).

Expert 1's feedback is summarised and presented in Table 4.38, together with the implications that it had for the design of prototype 4 of the curriculum.

Table 4.38: Summary of Curriculum Expert 1’s opinions and the implications thereof

Posed question	Expert 1’s opinion
1. Your opinion on the designed curriculum and its alignment with level 9 qualification descriptors for a professional master’s degree?	Concern was raised regarding the number of credits assigned to the curriculum and also to specific modules.
Implications for the curriculum	
<p>After careful consideration and revisiting of the outcomes of the different modules, the total credits were changed to the prescribed minimum credits of 180, with the module allocation as follows:</p> <p>Module 1: Theoretical foundation – 30. Module 2: Lifespan assessment and intervention – 60. Module 3: ASI and South African context – 30. Module 4: Research - 60.</p> <p>Expert 1 pointed out, in her analyses of the assessment activities, that modules 1 and 3 had, respectively, five and seven assessment activities, although module 3 had the same credit allocation as module 2 that included 15 assessment activities. It was therefore decided to reduce the credits of module 3 to 30 credits. The biggest change was thus reducing the number of credits for Module 3. The candidate’s reasoning on this (after considering the feedback from expert 1) was that the case load model that will be used in this curriculum would allow for competencies related to the realities of the South African context to be integrated into the cases and hours of learning could thus be reduced. Module 2 will be a core model of this curriculum and therefore the allocation of 60 credits, compared to the 30 each for Modules 1 and 3.</p>	
Posed question	Expert 1’s opinion
2. Your opinion on the clarity of the outcomes?	Opinion provided by Expert 1 was only relevant for the curriculum outcomes. A core construct of each curriculum outcome was identified by the expert and commentary provided on these constructs.
Implications for the curriculum	
All outcomes throughout the document were numbered. Curriculum outcome 7 was integrated into outcome 3, reducing the number of curriculum outcomes from 11 to 10. Curriculum outcomes 1, 3, 7 and 8 were refined, acting on comments from Expert 1.	
Posed question	Expert 1’s opinion
3. Your opinion on whether the described teaching and learning activities will assist in the development of competencies?	<p>Positive commentary was made on the “<i>hybrid of activities</i>” included. A suggestion was made to change ‘Skype contact’ to ‘electronic contact’ due to rapid electronic changes. The use of mentors in terms of practicalities was questioned and a warning was given that although “<i>peer teaching is good</i>”, it needs to be structured appropriately.</p> <p>Concerning Module 4, the research module, Expert 1 had concerns related to the time available to do research, especially if it is taken into account that the development of a protocol could take six months and that ethical clearance still has to be obtained. Considering that this is not a research master’s, she made the suggestion of an “<i>umbrella</i></p>

	<i>research proposal</i> ” that the candidate could develop and submit for ethical clearance and “ <i>then the master’s students each do a small aspect of the bigger proposal</i> ”.
Implications for the curriculum	
<p>The Skype contact was changed to electronic sessions. Mentoring came through as such a strong ‘component’ in this curriculum that the candidate decided to retain it as is, but cognisance was taken on practicalities such as costs. The cost of this curriculum will be calculated once the “ideal” curriculum is available and where necessary adaptations will be made. The candidate will ensure that all peer-assisted learning and assessment is well structured and monitored, and this will be written into the study guides of the modules.</p> <p>The suggestion of using pre-developed umbrella proposals as part of this curriculum was much appreciated by the candidate, as it does offer a solution for the “research project getting out of control”, a threat also mentioned by participants who had already been on a master’s journey and participated in activities for objective 3.2.1 (cf.3.2.1.1, Threats related to master’s journey). It will be possible to write an umbrella proposal including case studies, as well as a proposal that includes product design such as equipment or programmes. Having two umbrella proposals would provide choices to the candidates. The necessary changes were made in the curriculum feature section of the curriculum as well, as in Module 4.</p>	
Posed question	Expert 1’s opinion
4. Your opinion on the assessment activities and their relevance?	A suggestion was made for the use or inclusion of more technology-based assessments. Concern regarding the costs of this curriculum was once again expressed and the discrepancy between the number of assessment activities of Module 2 and 3 was once again highlighted. Continuous formative assessment was commended as “ <i>appropriate and fitting the outcomes</i> ”.
Implications for the curriculum	
Cognisance was taken but no direct changes were made as a result of the comments or suggestions.	
Posed question	Expert 1’s opinion
5. Any other comments regarding the curriculum in design.	The prerequisites of three years’ knowledge and skill in sensory integration was questioned, reasoning that the rationale for this professional master’s degree is to equip occupational therapists to become better clinicians. She posed the following questions: “ <i>Why only enroll them after 3 years of experience? My idea is that a professional master’s should guide the occupational therapists in delivering best practice from a professionally young age. If you follow the trends from Western countries where their requirement is a master’s before you can start practicing, then why wait?</i> ” The expert did declare that she “ <i>did not know the context of the sensory integration fraternity</i> ”
Implications for the curriculum	
The answer on the three-year prerequisite was actually due to the fact that the expert did not know that it took at least two and a half years to complete the SAISI training courses that was a prerequisite for enrolment in this new degree. Rethinking the three-year prerequisite, the candidate decided to remove it, as it is actually implied by the prerequisite of the SAISI training courses.	

As presented in Table 4.38, expert 1's comments and suggestions made valuable contributions to further and final refinements to the curriculum. Her analytical approach was interesting and delivered results which contributed to the final design of the curriculum. The inference was a rethinking of the weight of Module 3 and the subsequent reduction of the credits by nearly a half. This had a direct impact on the notional learning hours that would eventually impact on the extent of the teaching and learning activities included in the module curriculum guide. The use of an umbrella research proposal was also suggested, offering a solution not only for keeping the research projects realistic and manageable but also contributing to a bigger research "picture" that jointly could make a huge contribution in the field. All relevant changes, as discussed in Table 4.38, were made to prototype 4 and are indicated in a darker shade of grey and in bold and italics in the document (cf. Annexure R).

As already stated, curriculum expert 2 gave her opinion in a qualitative manner. This is given in Table 4.39 according to the posed questions, her notes on them, and a final section on the implications for the curriculum.

Table 4.39: Summary of Curriculum Expert 2’s opinions and the implications thereof

Posed question	Expert 2’s notes
1. Your opinion on the designed curriculum and its alignment with level 9 qualification descriptors for a professional master’s degree?	<p><i>The qualification outcomes are aligned with the learning achievements at Level 9 of the NQF and are appropriate for an occupational qualification at this level. It is clear that the level descriptors have been meticulously applied (although not rigorously as in a checklist) to guide the design of this programme. The competencies as outlined in the figure: Model of Competencies for M OT (SI), also feed into the outcomes in a logical and practical way. A sufficient balance of foundational; practical and reflexive competences has been integrated into the model. As required from a qualification on this level, it is clear that the continued focus on high level application in the programme will lead to the acquisition of advanced scholarship and specialist practice in the particular field.</i></p> <p><i>The outcomes of the modules contribute significantly to the qualification outcomes in a coherent way. Although the first 3 modules address theory and practice in “separately” defined and distinct areas, required competencies are integrated throughout the different modules, culminating in the final research article. It is evident that careful thought has gone into the design of the curriculum.</i></p>
Posed question	Expert 2’s notes
2. Your opinion on the clarity of the outcomes?	<p><i>“Outcomes of both the qualification and the modules are clear and unambiguously formulated to successfully guide the students’ journey. Although the outcomes are sufficiently detailed to inform materials development, they are by no means narrow and restrictive.”</i></p>
Posed question	Expert 2’s notes
3. Your opinion on whether the described teaching and learning activities will assist in the development of competencies?	<p><i>“The teaching and learning activities provide a mix of online and various contact interventions and as such provide for variety in the way in which the students will learn.</i></p> <p><i>It is appropriate for a programme on this level to provide a minimum of formal lectures, but to focus primarily on the students’ own construction of knowledge as co-designers of their own learning. The qualification is in essence student-centred and will sustain independent learning and advanced academic and professional development.”</i></p>
Posed question	Expert 2’s notes
4. Your opinion on the assessment activities and their relevance?	<p><i>“The decision to not include formal examinations is a sound one, and underlines the innovative approach of the qualification. Assessment activities are generally aligned with the outcomes of</i></p>

	<i>the modules and contribute collectively to the qualification outcomes."</i>
Posed question	Expert 2's notes
5. Any other comments regarding the curriculum in design?	<i>"The process followed with the design of the qualification allows for input from various experts in the field and could be used as an excellent example in other fields. The contextualisation of the curriculum, especially as depicted in the particularisation of cultural diversity in the application of sensory integration is commendable. Congratulations on a well-presented and conceptualised curriculum!"</i>
Implications for the curriculum	
The feedback received from Expert 2 was confirmational and no changes to the curriculum were suggested or indicated.	

Curriculum expert 2 provided notes on all the questions posed and was overwhelmingly positive, as is clearly seen in the verbatim quotes in Table 4.39. Her comments served not only to affirm the curriculum as it was designed at that stage but also confirmed that the changes made as a result of the evaluations during this micro-cycle of the design and construction phase were the final changes. Prototype 4 is thus presented as the final intended curriculum for the purposes of this study.

As none of the opinions/feedback received were relevant to the already existing competencies, no changes were made to version three of the Model of Competencies for the M OT (SI) qualification (cf. Figure 4.11). This final version of competencies was not included in the curriculum itself, as the candidate reasoned that, although the model had been a guiding document during the design of the curriculum, it would be better suited for use in the module guide which would be developed for this qualification. This would give the student a holistic picture of competencies that would be attained during the delivery of the curriculum and could also be used as a tool for monitoring performance, as discussed in 4.5.3.6.2.1.

As a final control activity to ensure that all the core areas of the design were addressed, the table on core design areas was completed (cf. Table 4.40).

Table 4.40: Core design areas of M OT (SI), design status and actions needed after completion of the third micro-cycle in the design and construction phase

Core design areas	Status	Actions needed
Core competencies to be attained	Finalized	None
Curriculum and components		None
a) Qualification and outcomes	Finalized	None
b) Modules	Finalized	None
c) Module themes	Finalized	None
d) Module outcomes	Finalized	None
e) Module specific outcomes	Finalized	None
f) Teaching and learning activities	Finalized	None
g) Assessment and description	Finalized	None
General information on context and conditions of curriculum	Finalized	None

The completion of the table with core areas of the intended curriculum also served as a “quality assurance” activity for the candidate. It was reassuring to see that the status was finalised for all areas and that there were no outstanding actions. The final intended curriculum is thus presented in 4.5.3.2.1.

4.5.4.2.1 *The final intended curriculum for a professional Master’s Degree in Sensory Integration (M OT (SI))*

The final intended curriculum aimed for in this research is presented below.

Master's degree in Occupational Therapy (Sensory Integration) (M OT (SI))

Total credits: 180

M OT (SI) qualification outcomes are to:

1. Produce a specialist occupational therapist in the field of sensory integration (MOT-SI) who can influence and contribute to the field at an advanced level of service delivery throughout the lifespan.
2. Provide the specialist MOT-SI with an understanding of the breadth of ASI®-related and underpinning knowledge that will equip the MOT-SI to deliver specialist services tailored to the needs of clients in this field and that will be internationally acknowledged.
3. Equip and systematically expand the specialist MOT-SI with a critical awareness of current challenges and/or new insights in the field of sensory integration in relation to advances in neuroscience and occupational science to address the complexities of sensory integration services in the South African context, ranging from first-world settings to third- world settings, while delivering services adhering to 'best practice guidelines'.
4. Consolidate a sense of equity, justice and service ethics in the specialist MOT-SI that will ensure accountability and reflexivity, irrespective of the work environment.
5. Develop competencies that will allow the specialist MOT-SI to proficiently articulate (verbally and in writing) complex SI-relevant matters to a range of audiences, dependent on need.
6. Broaden the specialist MOT-SI competencies in terms of transferable skills for application in other settings, disciplines and general life. These include the abilities to:
 - a. Plan, implement and manage projects,
 - b. Work independently and as part of a team,
 - c. Influence policies in terms of change, development and implementation.
7. Foster a culture of inquiry through the use of the specialist MOT-SI's clinical reasoning skills, expanded professional expertise in the field of sensory integration by developing innovative ideas or contributing knowledge in the field of ASI®.

8. Increase the specialist MOT-SI's ability to demonstrate originality in the application of knowledge, together with a practical understanding of how established techniques of research and enquiry are utilised to create and interpret knowledge and design products relevant for diverse settings in the South African context.
9. Develop the specialist MOT-SI's competencies to evaluate and critique methodologies, and identify gaps in terms of research, services, and advocacy.
10. Throughout the qualification process cultivate a specialist MOT-SI with competencies that will foster and support advanced scholarship by solving complex problems in the field of sensory integration, contributing to the ethical standards of ASI® service delivery in the South African context and to emerging as a leader in the field of sensory integration in South Africa.

GENERAL INFORMATION:

- Prerequisites:
1. B OT degree or BSc OT Degree.
 2. Successful completion of the SASIC 1-4 courses presented by SAISI or an acknowledged equivalent thereof.
- Delivery mode:
- The M OT (SI) curriculum will be delivered via a mixed-mode of delivery. Candidates are required to attend a compulsory block contact session early in each term with monthly scheduled electronic sessions. Teaching and learning activities include workshops during the contact sessions, self-study, online activities (the candidate is required to interact with peers, mentors and lecturers), case studies (theoretical and practical), and a hybrid of work-integrated learning modalities. Pre-constructed cases and real clinical cases will be the primary vehicle through which students will attain the necessary knowledge, skills and attitudes. Through extensive engagement with cases and set learning experiences that will include continued reflection and feedback, students will advance and actualize specialist ASI®-SI competencies.

Fundamental features:

1. Learning experiences will be integrated into a case-driven approach to learning. Students must therefore have access to cases from over the lifespan of those who have experienced sensory integration difficulties and dysfunctions. Three cases from the student's field of experience of ASI® will be identified, and the student will work with these during the two-year qualification period. An additional two cases that diverge from the student's field of experience will also be included in the student's work during the qualification period. The case load of each student will be determined in consultation with an academic mentor, assigned to the student, to ensure a case load that is representative of the lifespan and the realities of the South African context.
2. Each student will be allocated to a primary "academic" mentor at the beginning of the programme who will journey with them during the process of obtaining the qualification. This primary mentor will support the student in decision-making processes regarding suitable cases, reflection/discussions needed during assignments, projects, etc., and will assist in the development of the specialist MOT-SI. Students will also receive clinical mentoring from an acknowledged mentor in the field of sensory integration during the two-year period.
3. A research project (Module 4) will commence once modules 1 and 2 have been successfully completed. This project will be done as part of an umbrella proposal research which could either be case study research or product design research. The research will be conducted under the supervision of a study leader.
4. Students will be co-designers of their learning, collaborating with their academic mentor on learning experiences that will optimise their competency acquisition, thereby acknowledging that each student

will enter this qualification with a unique set of already obtained knowledge, skills and attitudes.

5. The delivery of the curriculum will start with an introductory day where students will be prepared for the qualification and for taking ownership of their own master's journey. Meetings with academic mentors will take place and planning regarding each student's study pathway will be done.

Assessment of four modules: Modules 1, 2 and 3 include activities of continuous formative assessment by means of informal, formal and structural assessment activities, with no formal exams. (The argument here is that students have to demonstrate consistent attainment of a broad range of competencies, and no one formative exam would suffice in deciding whether or not the student had been successful).

Module 4 consists of formative assessments and a final summative assessment of the research report. All four modules must be successfully completed for the qualification to be awarded.

Progression: Modules 1 and 2 will serve as foundations for Modules 3 and 4. Module 1 will build on knowledge gained at undergraduate level as well as knowledge gained during the SAISI training courses. Content of the module will contribute to knowledge of core theoretical foundations which will support and inform the application thereof in teaching and learning activities, not only of the specific module but also in the module 2 running co-currently. Competencies gained in module 1 will also provide a theoretical foundation for the two modules following, once modules 1 and 2 have been successfully completed. Module 2 is focused on attaining competencies that will contribute to comprehensive specialist sensory integration service delivery in the field of sensory integration. It will also provide the student with a solid foundation for dealing with the realities of the South African context presented in Module 3. The student will have

in-depth knowledge of the field that will serve as a solid foundation for making decisions on research topics for module 4.

Modules 3 and 4 will be completed once Modules 1 and 2 have been successfully completed. Module 3 will equip the student with competencies to plan and deliver sensory integration services for contexts varying from Western to Afrocentric, using knowledge, skills and attitudes attained in modules 1 and 2. The research module (module 4) will equip the student not only with competencies related to research and the communication thereof but additionally will foster an embracing attitude towards the importance of research in the field.

Extended progression will be possible but in line with the institution's policy.

Recognition of Prior Learning (RPL): The University of the Free State recognises prior learning and students who have prior learning experiences and are convinced that they have already gained the competencies indicated in the curriculum and will be able to provide proof of this can apply and submit themselves to the prescribed RPL process of the University of the Free State.

MODULES OF CURRICULUM M. OT (SI) VERSION 3

<p>MODULE 1: THEORETICAL FOUNDATIONS</p>	<p>Themes:</p> <ul style="list-style-type: none"> • Applied neuro-science • Advanced ASI® theory • ASI® and occupation • ASI® research
<p>Credits: 30</p>	
<p>Module outcome: The specialist MOT-SI will be able to apply theoretical foundational knowledge of applied neuro-science, occupation and participation, and ASI® theory and research in the process of planning and delivering specialised ASI® services.</p>	
<p>Specific outcomes: After the successful completion of this module, the specialist MOT-SI will be able to:</p> <ol style="list-style-type: none"> 1. Convey fundamental knowledge to peers on neuro-science as applied to sensory integration, ASI® theory and research, and ASI® and occupation. 2. Apply fundamental knowledge in a clinical reasoning process during management of cases. 3. Defend reasoning and decision making on sensory integration difficulties and dysfunctions based on fundamental knowledge of applied neuro-science, ASI® theory and research, and sensory integration as a frame of reference. 4. Evaluate and critique assessment and intervention methods related to or derived from Jean Ayres' theory of sensory integration based on knowledge of the scope and limitations of the field. 	
<p>Teaching and learning activities with relevant assessment</p>	
<ul style="list-style-type: none"> • Self-study (Formative) 	<ul style="list-style-type: none"> • Reading related to fundamental theoretical underpinnings and relevant to each of the themes will be required. Topics requiring comprehensive reviews will be provided. Assessment will be done through the completion of online questionnaires.
<ul style="list-style-type: none"> • Lectures (Formative) 	<ul style="list-style-type: none"> • Formal lectures on specific advanced theoretical themes will be delivered. Assessment of the ability to understand and apply theoretical knowledge on hypothetical cases will be done on-line and feedback will be provided.
<ul style="list-style-type: none"> • Student-led discussions (Formative) 	<ul style="list-style-type: none"> • Face-to-face and on-line student-led discussion groups where preparation to argue on theoretical constructs related to one of cases will be required. Demonstration of fundamental knowledge and the application thereof related to a case will be assessed. • Preparing a set of theoretical topics for discussion in face-to-face and on-line discussion groups. Knowledge, participation and critical and constructive contribution to

	discussions will be peer-assessed and feedback will be provided by lecturers.
<ul style="list-style-type: none"> • Case presentations (Formative) 	<ul style="list-style-type: none"> • Preparing cases for discussion in groups. The focus of group discussions will be on ASI® assessment findings and intervention planning related to the case's occupational engagement. Arguing and defending of findings, intervention planning and impact on occupational engagement within the group will be the focus. Depth of knowledge on ASI® assessment and intervention, impact on occupational engagement, ethical decision making and ability to clinically reason will be assessed and feedback will be provided by lecturers.
<ul style="list-style-type: none"> • Presentations (Formative) 	<ul style="list-style-type: none"> • Presenting one of the cases in a seminar where foundational theoretical knowledge is given as evidence to persuade the audience of the need for ASI® services. Students' ability to convey professional and specialist knowledge and make independent and appropriate decisions will be assessed and feedback provided. • Preparing and presenting assessment and intervention methods related to or derived from Ayres' work and lead an evaluation and critique session in peer group. Students' demonstration of knowledge on the scope and limitations of ASI®, related/derived sensory measures and methods and their ability to argue on different modalities will be assessed and discussion-based feedback will be provided.
Final assessment of module:	All assessment activities will contribute to final module mark. A final mark of 50% is required to pass.

MODULE 2: LIFESPAN ASSESSMENT AND INTERVENTION	Themes: <ul style="list-style-type: none"> • Babies to elderly <ol style="list-style-type: none"> 1. Client and occupational profiles • Diverse populations <ol style="list-style-type: none"> 1. Pathologies 2. Afrocentric versus Western approaches to ASI® • Case management
Credits: 60	
Module outcomes: The specialist MOT-SI will be able to deliver and/or coordinate comprehensive specialist sensory integration services to clients from over the lifespan in a variety of settings and always to the highest ethical standards.	

Specific outcomes:

After the successful completion of this module the specialist MOT-SI will be able to:

1. Make independent decisions regarding relevant ASI® assessment and intervention strategies for clients throughout the lifespan and in various settings and environments.
2. Demonstrate advanced ASI® assessment and interpretation skills, both verbal and documented, during case management, always considering the person, occupation and environment.
3. Provide skill and attitudinal evidence during case management of a deep understanding of the challenges and struggles that individuals and their families experience when confronted with sensory integration difficulties/dysfunctions.
4. Provide evidence of mentoring experiences, by an acknowledged mentor in the field of ASI®.
5. Communicate findings of cases, verbally and in writing, to professionals and parents/caregivers.
6. Reason and make sound judgments on the different sensory integration dysfunctions as identified through research during case management, case presentations and discussions.
7. Demonstrate advanced ASI® assessment and intervention planning skills of cases, using a data-driven decision-making process and thereby adhering to best practice.
8. Demonstrate skills in applying ASI® intervention that adhere to ASI® Fidelity Measure during videotaped and simulated intervention sessions.
9. Plan and deliver sensory integration services to cases that are appropriate, equitable and just in terms of person and environment, with an acute receptiveness towards those who do not have access to OT-SI services in simulated and real-world settings.
10. Demonstrate knowledge on the affordances of sensory integration equipment and its effective application during workshops, simulated and videotaped intervention sessions.
11. Possess the ability to self-critique own ASI® assessment and intervention with the necessary insight during reflection on videotaped sessions and during workshops.
12. Proven ability to make autonomous ethical decisions in the delivering of specialist MOT-SI services for cases involved in teaching and learning process.
13. Provide documented evidence of activities contributing to life-long scholarship in the field of ASI®.
14. Demonstrate the ability to take on the role of advocacy for sensory integration services by providing evidence thereof.
15. Rate peer ASI® intervention sessions successfully with the ASI®-Fidelity Measure under the guidance of a supervisor.
16. Provide evidence and reflect on the importance of self-direction and life-long scholarship in ASI®.
17. Provide evidence of a self-directed activity of conscious engagement in national and/or international activities with the aim of promoting ASI®.

Teaching and learning activities with relevant assessment

Reflective journaling
(Formative)

Reflection on work-based experiences will be done to develop and refine own conceptual understanding of ASI® service delivery. Reflections will be part of formative assessment.

Workshops (Formative)	Practically engaging in advanced ASI® assessment and intervention with demonstration of advanced practical skills in ASI® assessment and intervention. Video recordings will be made during workshops and reflected on as part of formative assessment.
Case studies (Formative)	<ul style="list-style-type: none"> • Arguing on decisions taken in the therapeutic process of cases regarding ASI® assessment and intervention and the impact thereof on a person, occupation and environment during group case presentations. Discussion and reflections will serve as formative assessment. • Preparing, documenting and presenting of motivated recommendations regarding appropriate, equitable and just ASI® services for diverse cases and in different settings where the presentation will be peer assessed and the documentation formatively assessed. • Presentation of a case that provides proof of specialist MOT-SI's understanding of challenges experienced by individual and family due to sensory integration difficulties/dysfunctions, which will be assessed by peers and lecturers, with formative feedback provided after presentations.
On-line discussion board (Formative)	Discussion of solutions for complex cases on discussion board according to guidelines. Contribution to discussion and possible solutions will be discussed and feedback provided as part of formative assessment.
Case management workshop and presentations (Formative)	Develop and design different components of data-driven decision-making process and present case studies verbally and in writing demonstrating ability to use data-driven decision-making process as part of best-practice during case management. Evidence of data-driven decision-making process will be assessed and formative feedback provided.
Simulation (Formative)	<ul style="list-style-type: none"> • Plan and execute intervention session in simulated environments reflecting competencies needed to deliver OT-SI services in Western and rural/ community settings. • Deliver ASI® intervention in a clinical skills unit with standardized "patients".
Video presentations (Formative)	<ul style="list-style-type: none"> • Presentation of video recordings of own cases regarding feedback sessions with parents/educators/professionals will be assessed and formative feedback provided. • Presentation of video recordings of intervention sessions, after which student will reflect on clinical reasoning during sessions for assessment purposes and formative feedback will be provided.

	<ul style="list-style-type: none"> • Submission of ASI®-Fidelity Measure video recordings of intervention sessions for successful rating and feedback.
Expert video recording discussions (Formative)	Group discussions on observations and insights after watching expert videos on ASI®. Participation and contribution to group discussion will be assessed.
Case discussions (Formative)	<ul style="list-style-type: none"> • Presentation and reasoning on case management on an advanced level, where decisions made, level of reasoning, assessments done, findings made and planning of intervention will be assessed and feedback provided. • Demonstration of the ability to argue on an advanced level on different sensory integration dysfunctions and discuss influence of sensory integration difficulties/dysfunctions on person, environment and occupation of cases in diverse settings. Argumentation and applied knowledge will be assessed and feedback provided.
On-line discussion board	Analysis and discussion of affordances and use of equipment in diverse settings. Contributions to discussion board will be formatively assessed.
Project (Formative)	Submission of a project where evidence of the student's competency in terms of advocacy for ASI® is demonstrated. Competency in advocacy for ASI® will be assessed formatively.
Rating (Formative)	Rating of peer intervention sessions under supervision according to ASI®-Fidelity Measure. In-depth discussion with trained ASI®-FM trained rater will form part of formative assessment.
Portfolio (Formative)	<ul style="list-style-type: none"> • Evidence in portfolio on activities supportive of self-direction and scholarship (barriers and enablers). Evidence of activities of self-direction and scholarship will be assessed and formative feedback will be provided by academic mentor. • Evidence in portfolio of self-initiated efforts to contribute nationally and internationally in the field of ASI® needs to be documented and submitted for assessment. Formative feedback will be provided by academic mentor.
Mentoring (Formative)	Submission of mentoring reports and reflections that will be assessed in terms of insight and depth, together with formative feedback from mentors.
Final assessment of module:	All assessment activities will contribute to a final module mark. A final mark of 50% is required to pass.

<p>MODULE 3: ASI® AND THE SOUTH AFRICAN CONTEXT</p>	<p>Themes:</p> <ul style="list-style-type: none"> • Philosophical grounding for Afrocentric and Western approaches • ASI® in different contexts (Private Practice, Hospitals, Schools, Primary Health Care, Communities) • ASI® translated to group settings • Transfer of ASI® knowledge in diverse settings
<p>Credits: 30</p>	
<p>Module outcomes:</p> <p>The specialist MOT-SI will be able to ground knowledge of ASI® services in an Afrocentric as well as Western philosophical approach when reasoning on and planning services for different South African contexts. The specialist MOT-SI will be able to deliver services to individuals and groups in different environments while always adhering to the highest ethical standards and best practice principles.</p>	
<p>Specific outcomes:</p> <p>After the successful completion of this module the specialist MOT-SI will be able to:</p> <ol style="list-style-type: none"> 1. Produce written proof of knowledge and understanding of an Afrocentric as well as a Western philosophical approach in the use of ASI®. 2. Adapt ASI® service delivery aligned with an Afro-western approach when indicated. 3. Demonstrate verbal and written knowledge on ASI® and diverse populations and contexts during case study presentations. 4. Apply primary health care principles in the delivering of ASI® services. 5. Design and produce innovative service plans for specific populations and contexts and present the service plans during a formal presentation. 6. Illustrate knowledge and understanding on primary health care and community-based practice and the realities of delivery or non-delivery of MOT-SI services on these levels in the verbal presentation of a written assignment. 7. Contribute to policy changes and/or implementation of services that would benefit a population struggling with sensory integration difficulties or dysfunctions. 8. Adapt ASI® assessment and intervention in predetermined and diverse settings whilst staying as true as possible to ASI® Fidelity. 9. Design or adapt sensory integration equipment creatively that will be relevant for under-resourced environments. 10. Demonstrate ability to transfer ASI® knowledge on different platforms and/or scenarios. 11. Demonstrate ability to emerge as mentor in the field of ASI®, mentoring a junior colleague and reflecting thereon in writing and submitting written reflections of the mentee. 	
<p>Teaching and learning activities with relevant assessment</p>	
<p>Workshop and group work (Formative)</p>	<p>Practical engagement in problem solving on real-world issues in the South African context and ASI® service delivery will be</p>

	addressed in workshop format during which a real-world problem will have to be solved during group work.
On-line discussion board (Formative)	Use of discussion board to argue on relevance of Western and Afrocentric philosophical orientations and how these influence sensory integration services and participation and contribute to understanding will be formatively assessed.
On-line assignments (Formative)	Applying theoretical knowledge on Western and Afrocentric philosophical orientations as they relate to the delivery of OT-SI services to one of the cases, which will formatively be assessed.
Case presentation (Formative)	<ul style="list-style-type: none"> • Demonstrate knowledge of health disparities in South Africa and the impact thereof on sensory integration services managing real-life case examples. • Provide evidence of how primary health care principles were applied to deliver ASI® services in a community/rural setting.
Assignment and presentation (Formative)	Predetermined assignment on primary health care and community practice addressing the realities of OT-SI service delivery. Written assignment and verbal presentation thereof will be formatively assessed.
Documentation and case presentation (Formative)	Managing a diverse case in terms of assessment, design and implementation of an innovative service plan adhering to highest ethical principles. Written documentation and verbal presentation of identified sections of case management will be formatively assessed.
Presentations (Formative)	Presentation of a self-initiated contribution to policy or service delivery changes related to sensory integration services. A presentation of the plan will be formatively assessed.
Product design (Formative)	Development or adaptation of a product/plan to contribute/enable service delivery in an under-resourced environment. The product/plan will be formatively peer assessed.
Video presentation (Formative)	Presentation of evidence by means of video recording, which will be formatively assessed, of ability to transfer ASI® knowledge to an Afro-western approach as applicable for different platforms and audiences.
Mentoring (Formative)	Mentoring sessions and experiences as mentor, with identification of challenges and strengths where written reflections of experience and discussions with academic mentor will serve as formative assessment.
Final assessment of module:	All assessment activities will contribute to a final module mark. A final mark of 50% is required to pass.

MODULE 4: RESEARCH	Themes: <ul style="list-style-type: none"> • Research theory supporting project • Project management • Innovation/professional expertise projects
Credits: 60	
Module outcomes: The specialist MOT-SI will be competent in appraising relevant literature that will contribute to knowledge on seminal and current research in the field and successfully complete an aspect of a research project, as part of an umbrella research proposal, that will contribute to the knowledge base of ASI®.	
<p>Specific outcomes:</p> <p>After the successful completion of this module the specialist MOT-SI will be able to:</p> <ol style="list-style-type: none"> 1. Discuss and argue on seminal and current research in the field of ASI®. 2. Identify current gaps in ASI® research that can be addressed. 3. Demonstrate knowledge of research project management. 4. Demonstrate an understanding of the development of a research question, aim and objectives in the field of ASI®. 5. Demonstrate competence in the application of knowledge of research methodologies in answering an aspect of a research question. 6. Execute and complete an aspect of research project, under the guidance of a supervisor. 7. Communicate/disseminate research findings in a publishable format. 8. Exhibit an attitude of embracing the importance of research in the field of ASI®. 	
Teaching and learning activities with relevant assessment	
Group discussions (Formative)	<ul style="list-style-type: none"> • Discuss and argue on relevant and seminal research during group discussions where level of knowledge and depth of argumentation will be formatively assessed. • Discuss research gaps in an effort to understand the research questions of the umbrella research projects (of which students will be doing a part) during group discussions with study leaders which will serve as formative assessment.
Formal lectures (Formative)	Lectures on the research process as applied to research projects will be presented and the development of a mock research proposal, relevant for the section of the research they will be conducting, will serve not only as formative assessment but also provide a provisional framework for a publishable article.
Information management (Formative)	Literature needed for successful completion of this module will include academic books and research articles which will necessitate information management. Independent searches on specified topics will also be required and managed. Formative feedback will be provided on success of information management.

Assignment (Formative)	Assignment on project management using own research as 'the project' that will be formatively assessed.
Research (Formative)	Executing research as applicable for the project. Research process will be formatively assessed.
Presentation	Present a talk on the meaning of research on becoming a specialist MOT-SI's where the presentation will be formatively assessed.
Scientific writing (Summative)	Writing up of research project in a publishable article for possible submission in a peer-reviewed journal. Summative assessment will apply for the article.
Final assessment of module:	All assessment activities will contribute to 50% of the module mark, with the summative assessment of the article contributing the other 50%.

4.5.4.3 Phase objective 4.3: Finalise existing design requirements and design propositions and identify new ones

Micro-cycle 3 of the design and construction phase did deliver one new design proposition, and this was added to the existing table of design requirements and propositions (cf. Table 4.41, Design proposition 3).

Table 4.41: Final design propositions and design requirements

Design requirement 1	All qualification and curriculum components must be supported and guided by the relevant statutory and institutional documents as they provide the structure, limits and expected requirements for the design of a curriculum.
Design requirement 2	To construct a professional master's degree in occupational therapy it is necessary to identify and/or develop the following: <ul style="list-style-type: none"> • qualification requirements. • outcomes pertaining to the qualification. • identification of modules and relevant themes. • outcomes pertaining to modules and specific learning outcomes for each module that are anchored in the relevant level descriptors. • Assessment activities indicating underpinning competencies and standards against which they will be assessed.
Design requirement 3	For the delivery of specialised occupational therapy services in diverse South African settings, competencies and teaching and learning activities to be included in the curriculum must be identified with the help of stakeholders and then tailored and refined to foster and develop the unique competencies needed by specialists to serve those involved.
Design proposition 1	International and national experts should be consulted in identifying core competencies that will guide the development of specific outcomes of a specialist curriculum.
Design proposition 2	In order to refine, expand or add on aspects of the curriculum in design it is necessary to obtain opinions, views and feedback from stakeholders and the literature should consistently be consulted and invoked, to eventually arrive at a final product.
Design proposition 3	To arrive at a final intended curriculum that can be submitted with confidence to the relevant institutional and statutory processes, it is necessary to obtain the opinions of curriculum experts confirming and adding final commentary to the designed curriculum.

The final design proposition that was added (cf. Table 4.41) was a direct result of the concluding activity in the design and construction phase. Although neither of the two participating curriculum experts were knowledgeable in the field of sensory integration,

their contribution not only added value but was also seen by the candidate as confirmation that the curriculum was well designed and was ready to be submitted to the necessary institutional and statutory processes.

Having concluded the curriculum design process with micro-cycle 3 of the design and construction phase, the candidate revisited and revised all the design requirements and design propositions in order to arrive at the final theoretical contribution of this study. Two design propositions, “In order to develop outcomes, relevant teaching and learning activities need to be identified that will support/foster the identified competencies” and “Include stakeholders such as clinicians or possible users of the programme to obtain the real-world challenges in the delivery of specialised services” (cf. Table 4.41: 4.5.3.8), were integrated into design requirement 3 (cf. Table 4.41). The candidate reasoned that it was more important to retain the identification of competencies and teaching and learning activities as a design requirement, since consideration of the South African context and its realities was pivotal to arrive at a curriculum that would serve the needs of the South African population in its diversity. She therefore concluded phase objective 1.5 (cf. 4.5.1.5), phase objective 2.3 (cf. 4.5.2.1.3), phase objective 3.3 (cf. 4.5.3.8) and the current phase objective 4.3 with the three design requirements and three design propositions given in Table 4.41. Together these represent the theoretical understanding emerging from this research. They are given below in paragraph format.

4.5.4.3.1 *Final theoretical understandings*

In order to design a professional master’s degree aiming to deliver specialists in identified fields of occupational therapy who would exit with advanced and specialised competencies aimed at *high level of theoretical engagement and intellectual independence as well as demonstration of the ability to relate knowledge to the resolution of complex problems in appropriate areas of professional practice* together with the ability to *demonstrate innovation or professional expertise* through research activities it is necessary to consider the following:

- a) Design requirements as they will provide guidelines and structure, identify boundaries and factors to be taken into account, and ensure contextual relevancy:

Design requirement 1: All qualification and curriculum components must be supported and guided by the relevant statutory and institutional documents as they provide the structure, limits and expected requirements for the design of a curriculum.

Design requirement 2: To construct a professional master's degree in occupational therapy it is necessary to identify and/or develop the following:

- qualification requirements.
- outcomes pertaining to the qualification.
- identification of modules and relevant themes.
- outcomes pertaining to modules and specific learning outcomes for each module that are anchored in the relevant level descriptors.
- Assessment activities indicating underpinning competencies and standards against which they will be assessed.

Design requirement 3: For the delivery of specialised occupational therapy services in diverse South African environments, competencies and teaching and learning activities to be included in the curriculum must be identified with the help of stakeholders and then tailored and refined to foster and develop the unique competencies needed by specialists to serve those involved.

- b) Design propositions as they will assist in making choices during the design process, in exploring and identifying possible solutions, informing research choices to be made in the process, and finally in achieving the aim of designing a curriculum:

Design proposition 1: International and national experts should be consulted in identifying core competencies that will guide the development of specific outcomes of a specialist curriculum.

Design proposition 2: In order to refine, expand or add on aspects of the curriculum in design it is necessary to obtain opinions, views and feedback from stakeholders and the literature. These should be consistently consulted and invoked in order eventually to arrive at a final product.

Design proposition 3: To arrive at a final curriculum that can be submitted with confidence to the relevant institutional and statutory processes, it is necessary to obtain the opinions of curriculum experts confirming and adding final commentary to the designed curriculum.

(Please note: the sections in italic are direct quotations from the descriptions of a Master's Degree (Professional) from "The Higher Education Qualifications Sub-Framework" (Council on Higher Education, SA, 2013, p. 38)).

4.5.5 Conclusion of Chapter 4

Chapter 4 began with an introduction on the methods to be used in the educational design research process of this study, together with a discussion of the general working methods to be implemented in the research. The ethical considerations were discussed, as well as the delimitations of the research. The actual design research process as it evolved during the study was then presented and discussed.

The research process implemented to arrive at the intended professional occupational therapy master's degree in sensory integration included two phases. The first phase was that of analysis and exploration, comprising one micro-cycle with the aim of arriving at a first skeleton prototype of the curriculum (cf. 4.5.1). Five objectives were set, including a data-generating activity involving international experts in the field of ASI®. Generation of the data, combined with exploration of the literature and extraction of the relevant guiding

literature, resulted in the drafting of a skeleton prototype of the curriculum, which was the fourth objective of this micro-cycle (cf. 4.5.1.4). The fifth objective was to formulate initial design requirements and design propositions as they emerged during this phase (cf. 4.5.1.5). This micro-cycle in the analysis and exploration phase also constituted a meso-cycle ((McKenney & Reeves, 2012, p. 78) in which the candidate was able to arrive at a first skeleton curriculum.

The second and most comprehensive phase of the research process was the design and construction phase (cf. 4.5.2). This consisted of three micro-cycles, each with its own aim and phase objectives. The aim of the first micro-cycle in this phase was to expand and refine the curriculum to arrive at prototype 2 (cf. 4.5.2.1). To achieve this aim three objectives were set. The first was to submit the skeleton prototype to the views and opinions of South African experts in ASI® who held academic positions at universities and additionally lectured on SAISI courses (cf. 4.5.2.1.1). Three individuals who fitted these criteria were approached and all three took part in a data-generating activity in the form of a semi-structured Skype interview. The second objective in this micro-cycle was to record the opinions of SAISI-trained occupational therapists on their level of competencies and satisfaction and their learning experiences on the SAISI training courses (cf. 4.5.2.1.2). A quantitative electronic survey was carried out, generating numeric data from 131 participants, recording an acceptable response rate of 33.93%. Data from these two activities allowed the candidate to design and construct prototype 2 of the curriculum. The third objective in this micro-cycle was to further develop and refine design requirements and design propositions (cf. 4.5.2.1.3). The initial design requirement and design proposition identified in the previous cycle were further developed and refined.

The aim of the second-micro-cycle of this phase was to expand and refine the curriculum to arrive at prototype 3 (cf. 4.5.3). This micro-cycle consisted of three phase objectives. The first was to obtain the views and opinions of occupational therapists delivering OT-SI services in diverse and under-resourced environments (cf. 4.5.3.5). Five occupational therapists serving in rural and/or under-resourced areas (diverse settings) agreed to take

part in a semi-structured focus group. The data obtained from this activity gave rich insights into the realities of delivering OT-SI services in diverse settings and assisted the candidate in refining competencies and identifying further teaching and learning activities that would support the attainment of the identified competencies. The second objective in this micro-cycle had two sub-objectives. These were, firstly, to obtain the views of occupational therapists delivering OT-SI services who has completed (or were in the process of completing) master's degrees in any field of occupational therapy on the challenges and opportunities they had experienced on their master's journey, and, secondly, to obtain their opinions on prototype 2 of the curriculum (cf. 4.5.3.6). Five occupational therapists who met the criteria agreed to take part in a semi-structured focus group. Valuable data were obtained, not only assisting in the further expansion and refinement of the curriculum but also contributing to the understanding of enablers and challenges experienced in a master's journey, further contributing to the general features of the curriculum.

During the discussion of the educational design research process in Chapter 3 (cf. 3.3.3), mention was made of the design process and the contribution it could make to the "professional development of its participants" (McKenney & Reeves, 2012, p. 75). In conclusion of the research process, the candidate needed to agree with a "third product" of design research suggested by McKenney, Nieveen and van den Akker (2006, In McKenney & Reeves, 2012, p. 75). Although the data-generating activities involving clinicians and academics were not formally 'constructed' as continuous professional educational activities, the candidate was aware that "energy" in the exchange of ideas, acknowledgement of experiences and listening to the opinions of others, served as valuable activities for the participants. A number of them, after the data-generation sessions of micro-cycle 2 in the design and construction phase were concluded, expressed their surprise at what they had experienced, stating that it was so much more than just research. One of the occupational therapists with a master's degree stated: "I thought it is just going to be a boring session of collecting data for research purposes, but it was so much more. I have actually learnt a lot and it meant a lot to have shared experiences". As already noted, the candidate did not purposefully 'design' the activities

in which clinicians or academics were involved as professional development sessions but will, after this research experience, attend more carefully in future research to this 'third product' of educational design research.

After obtaining the data from the second micro-cycle of this phase, the candidate continued with the design and construction, arriving at prototype 3 of the curriculum. The third objective of this cycle was the further development and refinement of design requirements and design propositions. The data contributing to prototype 3 culminated in the addition of two new design requirements and three new design propositions (cf. 4.5.3.8).

The aim of the third and last micro-cycle of the design and construction phase was to obtain conclusive opinions/suggestions from experts (cf. 4.5.4), enabling the candidate to bring the design process to a close and arrive at the final intended curriculum. Three phase objectives were set to achieve this. The first was to obtain opinions/views confirming the inclusion of the initially identified competencies of the international ASI® experts (cf. 4.5.4.1). The two international experts meeting the criteria were contacted and agreed to participate. Their opinions and suggestions were received by e-mail and their responses affirmed that the competencies included in the curriculum included their initial identified competencies and that the outcomes set would contribute to the delivery of specialist occupational therapists in the field of sensory integration. The second objective was to obtain the opinions of curriculum experts on prototype 3 (cf. 4.5.4.2). In the end, the opinions of only two experts could be obtained. One expert was in the field of education, the other in occupational therapy. Their opinions confirmed the content of the curriculum and resulted in final changes to outcomes and to the credits allocated. A suggestion from one of the experts on the use of umbrella research proposals for the research project provided for relevant changes in the research module. The third objective of finalising the existing design requirements and design propositions and identifying new ones was reached by reviewing all the design requirements and design propositions and concluding the second theoretical "product" of the research (cf. 4.5.4.3). The candidate believes that the theoretical understandings which emerged in the form of design

requirements and design propositions will contribute to a knowledge base in the profession of occupational therapy and will be considered in the design/development of future specialist degrees.

The information received in this third micro-cycle in the form of opinions, comments, suggestions and notes allowed the candidate to finalise prototype 4 of the curriculum. This also serves as the final form of the intended curriculum as presented in 4.5.4.2.1.

The three iterative micro-cycles that were included in this phase also constituted a meso-cycle. The two meso-cycles (one in the analysis and exploration phase and one in the design and construction phase) constituted a macro-phase in educational design research (McKenney & Reeves, 2012, p. 78). Also represented in Figure 4.1 of the actual implemented process of educational design research, these allowed for the design of the intended curriculum for a M OT (SI) degree. The candidate believes that the curriculum as designed has the inherent qualities that were highlighted in a task force review report on ‘the state of professional master’s degree programs in the United States and at the Pennsylvania State University’ (Clariana, et al., 2008, p. i). She referred to international findings, as professional master’s degrees are a relatively new qualification in South Africa, as discussed in 2.4.3. Although the Pennsylvania State University does not offer any professional master’s degrees in the field of occupational therapy, the qualification type itself was relevant, as it was stated in the report that professional master’s degrees are “.....practice-focused and preparatory for non-academic employment.....” and “.....professional master’s programs, more so than traditional master’s programs, intersect the integration between knowledge creation and knowledge application....” (Clariana, et al., 2008, p. i), which is also true for the new South African qualification (Council on Higher Education, SA, 2013, p. 38). Delivery modes of new programs should be flexible, with the use of blended, online, or face-to-face delivery to be determined by the program (Clariana, et al., 2008, p. iii). One of the reasons for the referenced report was that, at the time, the Pennsylvania State University wanted to extend and advance their professional master’s degree programs. In reviewing the seven recommendations made in the report, the candidate found that two related directly to the inherent features

of the designed M OT (SI) curriculum. In her opinion they were the following (Clariana, et al., 2008, p. iii):

- Professional master's degrees should be offered "...in innovative and blended ways."
- "Delivery modes of new programs should be flexible, with the need for blended, online, or face-to-face delivery to be determined by the program."

Reviewing a report of a United State university that in 2008 had already worked towards the internationalisation of their professional master's degree programmes (Clariana, et al., 2008, p. 18), the candidate was encouraged to identify features that emerged from her own research process and that are included in the design of this curriculum.

CHAPTER 5: CONCLUSIONS, REFLECTIONS AND THE FUTURE

5.1 Introduction

The final chapter of this thesis serves as a concluding summary of the candidate's research journey, enriched with reflections, possibilities and future plans. To summarise and reflect on several years' work, investment, hardship in terms of "withdrawing from typical day-to-day living" and personal growth is indeed a humbling task. Sensory integration as a body of knowledge and expertise in the profession of occupational therapy has been a passion and driving force throughout the candidate's career. Designing a master's curriculum that hopefully would contribute to the delivery of specialist occupational therapists in the future, able to serve individuals and families struggling with sensory integration difficulties and dysfunctions on a specialist level and in the diverse South African environments, was both a privilege and a gratifying experience.

5.2 Context and purpose of the research

Before embarking on her doctoral journey, the candidate already knew that sensory integration and formal postgraduate training in the South African context was the field in which she would do her doctoral research. In 2013, she had the privilege of taking part in a SANTRUST pre-doctoral proposal development programme. The opportunity to develop a research proposal on the SANTRUST programme was fundamental to this study. It exposed her to national and international experts to whom she will remain ever thankful for their "investments" in her doctoral journey. This learning experience was not only fundamental but transformative on many levels. The candidate's own research knowledge, skills and attitudes were transformed through being a SANTRUST "scholar". A well-developed PhD proposal, combined with the competencies gained on this programme, supported her throughout her research journey.

She began with the recognition of a need in the profession of occupational therapy specifically in the field of sensory integration. At the same time, an opportunity was offered by the announcement of the revised Higher Education Sub-Framework (HEQSF) in 2013,

providing for professional master's degrees. This new qualification type opened a route for professionals who were passionate about service delivery and wanted to obtain a specialised qualification which would allow for advanced competencies, including the delivery of high-level skills in a specific field of practice. The idea of designing a professional master's degree for occupational therapists who aspired to specialise in sensory integration as part of their professional pathway became a reality. The candidate was aware that a specialist register in the occupational therapy profession was under development and was under consideration at a professional board level, and this was included as part of the literature overview and perspectives in Chapter 2 (cf. 2.5.2.1). Her stance was that the design and presentation of the projected M OT (SI) degree to the professional board, together with the work already done by the board and the research of Crous et al (Crous, Hanekom, Jansen van Rensburg, Smallberger, & Sheik Ismail, 2016), could only strengthen the case for a specialist register in the profession.

The candidate's axiological assumption as she embarked on this doctoral journey was focused on the value of research that could create real-world knowledge, in this case in delivering sensory integration services in diverse environments, taking in both the first and third worlds. The national and international landscape of the currently available training in Ayres Sensory Integration (ASI®) was included as part of the research context in Chapter 1 (cf. 1.2). The international guidelines for training set by the International Council for Education in Ayres Sensory Integration (ICEASI) were also explored and discussed in Chapter 2 (cf. 2.5.3), as well as the South African Health and School plan (cf. 2.3.1). The realities of the current OT-SI service delivery were also laid out in Chapter 2 (cf. 2.3), emphasising sensory integration therapy as a central and specialised field of practice in occupational therapy for this study.

All the explored and discussed realities provided a background to the design of a master's curriculum which would enable greater access not only to training and service delivery but also to the development of the body of sensory integration knowledge. The candidate's ontological view of realism was a motivating force in ensuring contextual adherence and authenticity in designing a curriculum that aimed to deliver MOT-SI

clinicians, exiting with realistic, specialised competencies, executable in the context of real-world practice.

5.3 Delimitation- and limitations of the study

At the outset of the research process, the candidate decided on a specific delimitation, that of excluding the evaluation and reflection phase (the third phase) of the educational design process, as explained in Chapter 1 (cf. 1.8) and also discussed in Chapter 4 (cf. 4.4). Including the evaluation and reflection phase would have been a longitudinal and comprehensive process, determined by institutional and statutory processes, and dependent on professional, academic and statutory stakeholders who could not be controlled in the application and appraisal process of a new curriculum.

Certain aspects of this study should be approached with caution when being interpreted or applied, as they are viewed by the candidate as limitations:

- The data-generating activities in each micro-cycle were chosen with very specific objectives. Care should therefore be taken in generalising from these findings to similar contexts or applying them in the design or development of other curriculums.
- The participants selected for the different activities were guided by the process and the specific objectives of each micro-cycle. Their views and opinions may therefore differ when the process or objectives are slightly different. Results of individual activities should be interpreted with caution when generalised to similar processes or situations.
- The educational design research process as applied in this study cannot be generalised for the design of other similar curriculums. Each curriculum has its own purpose and outcomes, so that that processes, data-generation and other activities included will also differ. The same applies to the selection of participants, as those who contributed to the design of this curriculum might not necessarily be appropriate for other curriculum designs, since each curriculum and its design process will guide the methodological choices.

Lastly, the candidate acknowledges that the selection of participants, based on the different data-generating activities, had an impact on the findings and the final form of the curriculum. However, she believes that at the time and with the knowledge she had at the given points in designing the curriculum, she made choices which, according to her reasoning, contributed optimally to the design of the curriculum.

5.4 Answering of the research question

The research question was: *“What would be an international acknowledged curriculum within the prescribed guidelines of the Council on Higher Education (CHE) for postgraduate sensory integration training in a developing country that will allow students to exit with identified knowledge, skills, and attitudes on sensory integration theory, assessment, intervention, and research that will be on a professional master clinician level?”* It was clear to the candidate that real-world realities needed to be investigated and that multiple stakeholders in various contexts, both in South Africa and internationally, had to be considered for participation. In answering the “what?” question, pragmatic action was needed. From an epistemological viewpoint, knowledge had to be created by pragmatic means, and educational design research as a methodology offered the candidate such an approach. It not only allowed for the use of multiple methods to create ‘artefacts’ or products, but also had features which, in the words of McKenney and Reeves (2012, p. 13), were “...theoretically orientated, interventionist, collaborative, responsively grounded, and iterative”. The use of educational design research for this study was presented and discussed in Chapter 3 (cf. 3.3.1 & 3.6).

Educational design research was used both as an approach and as a methodology. As an approach, it was discussed in Chapter 2 (cf. 2.6.1) and was reviewed in order to enrich the candidate’s understanding of curriculum development and to identify components which would be relevant to the design as presented in Chapter 4 (cf. 4.5.1.1). The theory of educational design research and curriculum design also contributed to the initial design propositions as given in Chapter 2 (cf. 2.7.1).

Educational design research allows for the use of different methods. The candidate knew that different cycles of research would be involved in arriving at a final form of the curriculum, using different qualitative methods but not excluding quantitative methods.

The macro educational design process of this research (as shown and reflected on in Figure 4.1), contained two meso-cycles (one in the analysis and exploration phase, and one in the design and construction phase) and four micro-cycles (one in the analysis and exploration phase and three in the design and construction phase). A summative and reflective conclusion on how each micro-cycle contributed to answering the research question, together with the theoretical understandings that emerged in the form of design requirements and design propositions, is given below.

The first micro-cycle of the analysis and exploration phase, presented in Chapter 4 (cf. 4.5.1.1) and visually shown in Figure 4.1, allowed the candidate to achieve objective 1, set as an overarching objective for the research. Objective 1 was *'to obtain contextual knowledge of relevant requirements and guidelines within Higher Education (HE) (inclusive of curriculum development) and relevant professional organisations that will contribute to design propositions and requirements, directing and providing educational 'boundaries' within the curriculum design process.'* In preparing to embark on the research process the candidate scrutinised and explored the literature which could offer answers on curriculum design and relevant requirements. She also followed the guidelines set by the CHE, as they needed consideration in the design process. The literature and the documents of relevant professional organisations were reviewed, and guidelines or pointers were extracted. The candidate relied extensively on the literature to identify, summarise and synthesise what was available, creating a supportive textual foundation for the design of the curriculum (cf. Figure 4.1: Analysis and Exploration Phase). The literature overview and the relevant perspectives contributed to ensuring consistency in terms of a logical and cohesive structure for the intended master's curriculum in sensory integration – the 'product' and primary contribution of this research. It also helped to identify initial design requirements and design propositions, ultimately culminating in new knowledge – a second contribution emanating from educational design

research and specifically in this study. The contributions made possible through educational design research were discussed in Chapter 2 (cf. 2.7.1) and in Chapter 3 (cf. 3.3.3).

Objective 2 of the research was *‘to identify the conceptual knowledge, skills, attitudes as well as learning experiences to be included in the design of the curriculum of a professional master’s degree in sensory integration that would allow clinicians to attain competencies inherent to clinicians delivering specialised OT-SI services.’* This was initiated during the analysis and exploration phase (cf. Figure 4.1: meso-cycle 1, micro-cycle 1) when international experts in the field of ASI® were approached for their opinions. Data were collected through semi-structured e-mail interviews in which four international experts gave their personalized views and opinions on the core competencies a master clinician in sensory integration should exhibit. In doing so they added a ‘subjective voice’ to the curriculum. They also shared their opinions on the learning experiences they deemed were important to include in a master’s curriculum. From the data generated in these interviews the candidate designed a draft Model of Competencies for M OT (SI). This was discussed in 4.5.1.3.4 and visually presented in Figure 4.4. The third and final version of the model not only served as the first additional product of this research but was also used in the generation of subsequent data. It was refined as further data were collected and generated, culminating in a third and final version. This final version of the model of competences was presented in Figure 4.11 in 4.5.3.7 of Chapter 4.

The data generated from the international experts’ views and opinions, together with the textual information, were used to design a first skeleton prototype of the planned curriculum, presented in Annexure D. It consisted of core curricular components, namely exit-level outcomes, proposed modules and their respective learning outcomes, and proposed assessment activities, as well as possible teaching and learning experiences. This first skeleton prototype, together with the drafts of the initial design requirements and design propositions presented in 4.5.1.5, concluded the analysis and exploration phase of the research.

Objective 3 was *‘to obtain contextual knowledge on realities of delivering sensory integration services in South Africa and ensuring that the necessary competencies for delivering specialist OT-SI services relevant for the South African context are included in the curriculum’*. Objective 4 was *‘to engage in the progressing phases of the educational design process, iteratively designing and constructing evolving prototypes of a curriculum for a professional master’s degree in sensory integration which will ultimately culminate in a final version of the curriculum ready to be submitted to the institutional and statutory approval processes’*. Both these objectives were achieved in the design and construction phase.

Objective 3 was achieved in a data-generating activity that formed part of micro-cycle 2 of the design and construction phase (cf. Figure 4.1). It was important for the candidate to obtain data on the realities of OT-SI service delivery in South Africa. One of the challenges presented in the conclusion of Chapter 2 (cf. 2.8) was how to apply a highly researched and specialised field of a profession, where the expertise and guidance came from a first-world country, to the local realities and needs of the society and a profession in a developing country, while still adhering to international guidelines. This objective was also supported by data generated during the previous micro-cycle. The candidate knew from experience that additional competencies might be needed, and that these would not necessarily be identified by international experts in the field of ASI®. This meant that context-relevant teaching and learning activities had to be chosen that would ensure the attainment of all competencies. A focus group was held with occupational therapists delivering OT-SI services in rural and/or under-resourced areas (diverse settings), and this exposed the realities which needed additional consideration in terms of competencies. The findings from the focus group were presented and discussed in Chapter 4 (cf. 4.5.3.5). As a result of the data generated in this activity, a competency of ‘adapting ASI® and ASI® service delivery’ was included in the Model of Competencies (cf. Figure 4.11). This meant that specialist MOT-SIs would have to handle large numbers of clients, transferring knowledge to a multi-membered team who would often be the “hands” of the MOT-SI in delivering services (and could include educators and/or members of a community with limited education and qualifications), and deliver services in limited

spaces with only the bare essentials in terms of sensory integration apparatus. This data-generating activity led to the design and inclusion of relevant outcomes in the curriculum, aligned with the competency of adapting ASI® and ASI® service delivery.

Objective 4 was achieved through an interactive and iterative process in which the curriculum was submitted in three micro-cycles to the views and opinions of different stakeholders and experts. At the beginning of the design and construction phase of the first skeleton prototype of the curriculum, the candidate needed the views and opinions of South African experts in ASI® holding academic posts at universities who were also lecturing on the training courses of the South African Institute for Sensory Integration (SAISI) (cf. 4.5.2.1.1, Phase objective 2.1). In this phase there was active engagement with South African stakeholders who could contribute to the design of the curriculum (cf. Fig 4.1, Design and Construction Phase). The South African experts involved in this micro-cycle contributed to the design and construction of teaching and learning activities, assessment activities, and curriculum content (in the form of possible themes). They also identified aspects of the curriculum which needed further exploration. The concept of 'Design strengths', also emerging as a category from the data, was a major motivation for the candidate.

The second phase objective of this micro-cycle was to obtain numeric data on the perceptions of SAISI-trained occupational therapists. To achieve this, a quantitative method was used, the only one in an otherwise qualitative process (cf. 4.5.2.1.2). An electronic questionnaire gathered data on perceptions of the contribution of SAISI courses to clinicians' competencies, their opinions on their experiences, levels of satisfaction, and their need for further qualifications. Additional needs, in terms of competencies, were also identified by the participants. This was especially important as they themselves could be possible users of the curriculum in the future. The data collected on perceived levels of competencies and satisfaction during the completion of the SAISI training courses helped the candidate in further refining the competencies and constructing relevant outcomes for the curriculum. The participants identified those learning experiences they had valued during their SAISI training, offering insights into

which teaching and learning activities had contributed the most, and these were considered for inclusion in the curriculum. The general demographic information obtained gave insight into areas of occupational therapists delivering OT-SI practice/service delivery, confirming that, while the majority of services were delivered to children, the need for services aimed at adolescents and adults was increasing. This confirmed the candidate's decision not only to design a curriculum focused on OT-SI for children but to include the lifespan spectrum.

The first micro-cycle of the design and construction phase was concluded by integrating the findings in the design process, culminating in prototype 2 of the curriculum (cf. Annexure G), by refining the Model of Competencies to arrive at a second version (cf. Figure 4.7), and by further refining and developing the theoretical understandings emerging from this research (cf. 4.5.2.1.3).

The second micro-cycle of the design and construction phase aimed at expanding and refining the curriculum to arrive at prototype 3, as presented and discussed in 4.5.3. The first of the three phase objectives set for this micro-cycle was to obtain the views and opinions of occupational therapists who delivered OT-SI services in diverse and under-resourced environments. The second phase objective had two sub-objectives: (1) to obtain the views of occupational therapists delivering OT-SI services who had completed (or were in the process of completing) master's degrees in a field of occupational therapy on the challenges and opportunities they had experienced on their masters' journey, and (2) to obtain their opinions on prototype 2 of the curriculum. The third phase objective was to further refine the existing design requirements and propositions and to identify new ones where relevant.

For both phase objective 1 and 2, focus groups were held with clinicians who were involved in or delivering OT-SI services (cf. 4.5.3.3). The first focus group was held with occupational therapists working in diverse settings (under-resourced and rural). The findings from these were given and discussed in 4.5.3.5. The data generated from this focus group contributed not only to the further design of the curriculum but also broadened

the candidate's knowledge of the realities faced by practitioners in delivering OT-SI services in diverse South African contexts. She gained renewed respect for the passion, perseverance and resilience of the occupational therapists working in these challenging environments. Not only was knowledge obtained on practising sensory integration in diverse contexts, but a category of enablers of sensory integration services in diverse contexts also emerged from this focus group, contributing to the design and construction of further competencies and outcomes included in the curriculum.

The second focus group was held with occupational therapists delivering OT-SI services who had completed, or were in the process of completing, master's degrees in a field of occupational therapy. The candidate felt that the purpose and outcome of the first sub-objective, to obtain information on the challenges and opportunities experienced on a master's journey, could be open to debate. Having been involved in master students' studies for a number of years, she was acutely aware of students' experiences and challenges and knew that these often led to the discontinuation of their studies. The University of the Free State's Research Strategy 2015-2019 also speaks on the low throughput rate of postgraduate students and the importance of supporting and managing such students, as well as minimising the resultant negative impact on the university (University of the Free State, 2015, p. 17). It was therefore important for the candidate to explore the challenges and opportunities when designing a master's degree from scratch, to ensure that, where possible, both the challenges and the opportunities would be addressed in the design of the curriculum. The findings on the challenges and opportunities encountered by occupational therapists were presented and discussed in 4.5.3.6.1. In summary, two categories emerged from this part of the focus group data: threats relating to master's journeys and enablers for master students. The findings contributed to important decisions on the delivery mode of the curriculum and to the careful consideration of the amount and frequency of on-campus time expected from students. These findings highlighted the importance of including the preparation of students for the master's journey in the design of a specialist master's curriculum. Fostering the growth of a consciousness of the real-world challenges to be expected during such a journey was also identified as important.

The second sub-objective, to obtain the participants' opinions on prototype 2 of the curriculum, resulted in nine categories, presented and discussed in 4.5.3.6.2. These were similar to previous categories and also contributed to the refinement of the curriculum as well as to the Model of Competencies, leading to prototype 3 of the curriculum and version three of the Model of Competencies (Figure 4.11).

The third phase-objective was achieved when the themes and categories emerging from this micro-cycle culminated in further refining and developing the theoretical understandings of the research process. Three design requirements and four design propositions were formulated by the end of micro-cycle 2 of the design and construction phase, and these were presented in 4.5.3.6.1 in Table 4.34.

With the finalising of prototype 3, the curriculum was nearing completion. It was ready to be presented to experts for their concluding views and opinions, in order to arrive at a final, intended curriculum (cf. 4.5.4.2.1). Only two participants were involved in each of the two activities of this final micro-cycle. However, their feedback was condensed, limited and varying in nature, so the candidate decided to handle these findings as evaluation rather than 'data generation' activities.

As a first phase objective for this micro-cycle, the candidate asked two of the international ASI® experts who had participated in the micro-cycle of the analysis and exploration phase (cf. 4.5.4.1) to give their opinions/suggestions on prototype 3 of the curriculum and to confirm the inclusion of their initially identified competencies. Her reasoning was that the initial competencies identified by them had been refined through the design process, and more had been added which were especially relevant to the South African context. Although the designed curriculum would be more relevant to third-world countries, it was important that it should also be internationally acknowledged. The candidate therefore obtained the views/opinions of international ASI® experts who were also involved in sensory integration training courses internationally. Both international experts expressed

their appreciation of the curriculum and suggested making only minimal refinements to it. These refinements were presented in phase objective 4.1 (cf. 4.5.4.1).

The second phase objective was to obtain the opinions of curriculum experts on prototype 3 of the designed curriculum (cf. 4.5.4.2). This was probably the most challenging in terms of identifying curriculum experts who would be willing to take part in this final activity. In the end, two experts agreed to participate. One was from the field of occupational therapy, while the other came from a background in higher education. Neither was knowledgeable in the field of sensory integration. One of the experts took a more analytical approach in offering comments and suggestions, making valuable contributions in finalising the notional hours and the credits allocated to the curriculum and subsequent modules. A decision was also made to use umbrella research proposals for the research module, supporting realistic and manageable research projects, based on feedback received from this particular expert. The full summary of this expert's opinions/suggestions and how they were applied in the design of the curriculum was given in Table 4.39 (cf. 4.5.4.2). The second curriculum expert, who approached her response in a more qualitative manner, gave overwhelmingly positive and affirmative feedback, the summary of which was given in Table 4.39 (cf. 4.5.4.2).

After receiving the feedback on the two activities in this micro-cycle, the candidate made final refinements and changes to the curriculum. Prototype 4, given in 4.5.4.2.1, thus serves as the final form of the planned curriculum for the purpose of this study. The feedback received during this last micro-cycle did not suggest changes to the Model of Competencies, so version 3 serves as a final model of the competencies as they emerged from the research. The Model of Competencies (M OT (SI)) was an unexpected second product emerging from the study, serving as a valuable guiding document during the design process. It would also be practically implemented as a monitoring tool during the delivery of the curriculum, as discussed in 4.5.3.6.2.1.

The first contribution 'delivered' by this educational design research process, the intended curriculum, also addressed the axiological values of access and enablement, discussed

in the philosophical foundations of the study in Chapter 3 (cf. 3.2.). It aimed at creating an all-inclusive 'eco-system' in which specialised sensory integration training and service delivery could flourish by enabling contextualised practise of sensory integration in the real world, providing access to the body of sensory integration knowledge and skills, as well as contributing to the field through research. In contributing to research, knowledge creation, sharing and evaluation of the aims that the CHE set for higher education in South Africa, as discussed in Chapter 1(cf.1.3), would also materialise. The candidate believed that, because the curriculum takes into account the contextual realities of South Africa, it would in the long term contribute to "social transformation", as discussed in Chapter 1 (cf. 1.3). Students would exit with competencies allowing them to deliver best-practise OT-SI services in diverse contexts. In doing so, they would contribute to social transformation by addressing the dire need for sensory integration services in population groups that currently cannot afford these services. Students would qualify with "high-level competencies and expertise", and "responsible and constructively critical" citizenship would be fostered, as they achieved the growth of the highlighted attributes in the curriculum (South African Government, 1997, pp. 3,4). Knowledge creation, sharing and evaluation would also be an integral part of the curriculum. The candidate believes that this curriculum, uniquely designed through a process of educational design research, would foster the attainment of the identified competencies relevant to first-world knowledge, skills, and attitudes, but would also address the competencies needed in a third-world context of "responsible and constructively critical" citizenship (South African Government, 1997, pp. 3,4), as discussed in Chapter 1 (cf.1.3).

The second contribution, the design knowledge (or theoretical understandings in the form of design requirements and design propositions), fed back into the ontological search for realistic knowledge that would be context-appropriate (cf. 3.2). The absence of a pre-existing, contextually relevant M OT (SI) qualification and appropriate design knowledge was addressed in this research. The design knowledge (theoretical understandings) emerging from the research in the form of design requirements and design propositions, was limited, as only one specific qualification type, within a specialised field of one specific profession, was researched. However, the candidate believed that the knowledge created

during this research could be a foundation for further research or designs/developments of professional master's degrees in occupational therapy. The theoretical understandings of the kind created in this research could be described, according to McKenney and Reeves (2012, pp. 35, 36), as "prescriptive" or "local" theory, since the design knowledge is applicable to the design of professional master's degrees in occupational therapy.

The fifth and final overarching objective of this research will be presented in the next section, as it has direct relevance to knowledge contribution.

5.5 Contribution to knowledge and generalisability

In this research, knowledge was created by pragmatic means. The candidate followed an educational design research methodology, allowing for multiple research methods. She used qualitative methods but included a strand of quantitative research method, applied in cyclical iterations of activities, to design and construct an 'artefact' which in this study was the planned curriculum for a M OT (SI) qualification. As no other contextually relevant curriculum existed, the candidate had to design and construct one from a 'clean slate', using theory and documents as underpinnings, establishing guidelines, and identifying core constructs. Through a flexible process of iterative, multi-cycles of design and construction, the first contribution (product) of the research emerged and evolved. The candidate views the final intended curriculum, as presented in 4.5.4.2.1, as a unique contribution to the field, since no similar, contextually relevant curriculum currently exists.

One of the advantages of educational design research is that it not only creates a product but also creates knowledge. Here the candidate discusses how she achieved the fifth and final overarching objective, which was *'to carefully document the design process together with design requirements and design proposals emerging during the research process, producing knowledge for future use'*. She used the description of theoretical understandings as given by McKenney and Reeves (2012, p. 39) as the knowledge "produced" during this research process. All insights gained that guided, supported, delineated, or provided solutions were formulated into design requirements and design propositions, depending on whether they were related to the 'boundaries' or the 'function'

of the curriculum (design requirements) or were fundamental ideas used (design propositions) in the design process, to arriving at the final intended curriculum. The development and refinement of design requirements and design propositions was the last phase objective in each of the micro-cycles. In all of the four micro-cycles, implemented in this research, the theory, data and/or information obtained were used to develop and refine the design requirements and design propositions. In micro-cycles where qualitative data analysis was carried out, the aim was to move from generalised theory towards design requirements and design propositions. This was done through a process of coding and categorisation of data, culminating in “themes”, or in the case of this study, design requirements and design propositions. This process was followed throughout Chapter 4. The final three design requirements and three design propositions theoretical understandings, or knowledge emerging from this research, were presented in 4.5.4.3 and 4.5.4.3.1.

It is the candidate’s hope, firstly, that these theoretical understandings will serve as ‘foundational’ theory which can be expanded in future educational design research in this field, and, secondly, that this very limited and focused theoretical understanding will contribute in a small way to future designs of professional master’s degrees in occupational therapy. It also speaks to the generalisability of the knowledge created, in that it could contribute to a knowledge base in curriculum design of professional master’s degrees in the occupational therapy profession, and that the designers/developers of future curriculums will be able to draw on theoretical understandings of this research.

The Model of Competencies for M OT (SI) that was created from the data emerging from micro-cycle 1, objective 1.3, in the analysis and exploration phase, refined throughout the research process (except for the last micro-cycle), and presented and discussed in the relevant sections in Chapter 4, is also viewed by the candidate as a contribution to knowledge and an unexpected secondary ‘product’ of the research. As discussed in the previous section, she hopes that future designers/developers of professional master’s qualifications will realise the benefits of creating a model of competencies as part of the design process, since it could also serve as a tool to monitor progress during the delivery

of the curriculum. The concept of a model of competencies is a further contribution of this research that could be generalisable to other master's curriculums in the profession of occupational therapy.

Another contribution to knowledge and a 'secondary product' emerging from this research was the development of a criteria checklist for a professional master's degree (cf. Annexure B). The candidate used this as a quality assurance method to ensure that all the relevant categories and components of the curriculum, identified during the literature and document review, were attended to before she finalised the curriculum (cf. 4.5.3.9: Table 4.36). The candidate is of the opinion that the checklist could also be used in the design/development of future professional master's degrees.

A final secondary 'product' emerging during the research process was the table showing the core design areas of a curriculum. This was first presented in 4.5.1.4 (cf. Table 4.8) as part of the phase objective to draft a skeleton prototype of the curriculum and was used in all the subsequent micro-cycles. While this was a relatively small contribution, it was useful as a control mechanism indicating the status of each area, the design status and the actions needed. As a tool it is generalisable and could be used in the design of similar curriculums.

5.6 The candidate's journey

In the introduction to this chapter, the candidate stated that summarising a PhD journey in itself is a humbling task. Despite the challenges, the personal growth she underwent was enriching and highly satisfying. She learnt and grew on many levels during the journey, but at the same time was intensely aware of how much more there was to learn.

Two areas of growth in knowledge need special mention, those of curriculum design as a field and educational design research, specifically as a methodology. During her career at the university, the candidate was involved in the review and/or development of various components of undergraduate and postgraduate curriculums. The 'development' of curriculum components or reviewing of a curriculum were guided or driven by individuals

or groups (in the case of curriculum review), guiding staff on curriculum development and in deciding on 'what should be best'. A research-driven approach was never used during review or development. For the candidate, applying an educational design research approach to curriculum design aroused a number of strong responses:

1. It was enlightening in terms of the valuable contribution educational design research can make in the design/development of a curriculum. In the candidate's opinion, the use of educational design research in the creation of a curriculum is an invaluable investment.
2. She discovered the value that stakeholders could add by implementing an educational design research process. Spending focused 'moments' with stakeholders and listening to their views and opinions was a privilege. To return with the data to a 'drawing board' and 'create' design results with the data was both enriching and rewarding.
3. It was highly satisfying to be able to infuse creativity not only into the research process but also in the design of the curriculum. Examples are the 'space' for creativity in the choice of research activities and participants, the option to think out of the box and create products such as the Model of Competencies (MOT(SI)), and of course the design of the curriculum itself. This process was an incredible learning curve and highly gratifying.

Carrying out an educational design research process was much more challenging than the candidate had at first envisaged. Although the literature had warned her about the challenges, the most overwhelming aspect was the sheer amount of data involved and the challenge of containing it. She needed continuously to revisit the qualitative data to ensure alignment and relevance. Although the depth of the data analysis was not perhaps as notable as in previous research with which she had been involved, its extent and volume were definitely more intense and challenging. Established models already existed for the educational design research process and this helped in the research process. The

decision mainly to use the model proposed by McKenney and Reeves (2012, p. 78) reinforced the candidate's own reasoning and decision making. Her research process deviated from the proposed model of McKenney and Reeves in that only one cycle of analysis and exploration was used, as well as one cycle of design and construction. A final evaluation and reflection phase was not included because of the delimitation, as mentioned in 1.8 and discussed in Chapter 4 (cf. 4.4). The phases applied in this research process were more in line with earlier thoughts and models of the different phases, and these too are discussed by McKenney and Reeves (2013, pp. 74, 75). Generally, three main phases of the educational design research process were described. In the first of these, the problem is analysed and explored. Where relevant, a draft of a possible solution was developed (the product). This phase was followed by a design phase, where the product is submitted to iterative cycles of "drafting and prototyping" (McKenney & Reeves, 2012, p. 74), depending on the information and feedback received. The third and last phase is the evaluation phase where the product is submitted to empirical testing. The candidate reasoned that these three phases would be suitable for the design of the curriculum. Having concluded the research, she admits that, while evaluation and reflection were done in each of the micro-cycles, the process was so interwoven, with more than one research activity included in a micro-cycle, that it would have been difficult to separate the evaluation and reflection processes. She also viewed the 'evaluation' that took place more as reviewing and reflecting. For the purpose of this research, she can confirm that it was during these 'stages' that design requirements and design principles were formulated and/or refined.

The most challenging part of the educational design research process was the formulation and writing up of the knowledge created during the design process. The literature giving guidance on this important aspect of the second product of educational design research did not always elaborate on the 'how', but was focused rather on a specific research product. In 'mastering' this challenge, the candidate found that design science literature on design principles was helpful, giving her a basic understanding of the importance of creating knowledge through design and of writing this up for future use. The publication of McKenney and Reeves on "Conducting Educational Design Research" (2012) was a

primary facilitating resource. It not only enhanced her understanding of educational design research and aided in decisions relating to her own research but also contributed to her process of formulating and writing up the knowledge created.

The constant revisiting and evoking of the relevant literature in the design and construction of the curriculum was enriching, offering insight into and support of the research process and findings. As a novice in educational design research, the candidate had constantly to revisit the literature on the subject. She often asked herself whether it was wise to use a methodology of which she only knew some of the methods, but which could still be included in the research process. In answering this question, she had to start by reminding herself that she still had much to learn about educational design research. Nevertheless, 'journeying' with educational design research methodology during this PhD process was incredibly rewarding.

Realising the potential of educational design research, she is now eager to explore the further use of this methodology in the higher education setting, especially in terms of products which could be created in support of curriculum delivery. An example would be further studies on the use of models of competencies as personal performance monitoring tools for students. She would also be interested in implementing an educational design research process in the form of a curriculum review. Obtaining formalised views and opinions from all relevant stakeholders, including the users of the curriculum, would in the opinion of the candidate be highly informative and transformational, contributing to the relevancy, practicality, and effectiveness of the curriculum.

In summary, although it was challenging and at times overwhelming, the candidate is grateful for the journey. She not only gained knowledge and skills in educational design research, but was also able to confirm the importance of calculating the realities of OT-SI delivery in a third-world country such as South Africa, and addressing the much needed competencies in the design of the curriculum.

5.7 The future

The first step following the completion of this research will be to start the institutional and statutory processes involved in the approval of this curriculum as part of a new qualification, as discussed in Chapter 2 (cf.2.6.2).

In terms of future research, once the curriculum has been delivered, the candidate is eager to undertake a research project focused on the final phase of evaluation and reflection as visually presented in Figure 4.1 in this study and briefly discussed in Chapter 3 (cf. 3.3.3). It would be important to obtain results on users' interpretations of the perceived curriculum, including both the students and those lecturers and mentors who would be involved in the delivery of the curriculum. She would also record students' experiences on the attained curriculum, as this would offer weighted evidence on whether the outcomes developed for it had been achieved and the identified competencies obtained. Both parts of such a research project could also provide conclusive information on the designed curriculum and could lead to further refinement of it, adding to its value and uniqueness. Information on the delivered and attained curriculum would contribute to new design knowledge that could further expand the theoretical understandings obtained and developed during this research process.

To the knowledge of the candidate, this curriculum will be the first in the profession of occupational therapy to be designed in the South African context, through a process of educational design research. Its success in the field will confirm the candidate's 'post-PhD' claim that educational design research should be an integral part of designing/developing curriculums. In making this statement, she admits that she is a 'new-born activist' for the use of educational design research in curriculum design/development. For her, therefore, the 'voicing' of the results of this research will be of the utmost importance.

Apart from the additional research already mentioned, the candidate will be planning further publications derived from this work. She has already presented a paper at the 2017 European Sensory Integration Congress in Vienna, Austria, with the title: "Designing

a professional master's curriculum for sensory integration training". She was also invited as a plenary speaker to the 2017, Iberic Ayres Sensory Integration Congress in Spain. In her paper, "Training in sensory integration – an international perspective", she drew on her research to highlight the importance of the additional competencies needed in third-world countries in the delivery of OT-SI services and their impact on training. A poster on "Designing a contextual relevant professional master's degree for specialist training within the field of sensory integration" has been accepted for the World Federation of occupational Therapists (WFOT) 2018 Congress that will be held in Cape Town at the end of May.

In terms of possible topics for further publications, the following are already on the 'drawing board':

- Designing a professional master's curriculum for sensory integration training.
- The use of educational design research in the development of curriculums in the profession of occupational therapy.
- Experiences of occupational therapists delivering sensory integration services in diverse contexts.
- Master students' journeys: are we providing the needed expertise?

For the candidate, after this PhD journey, there is still much to do in the future!

5.8 Concluding remarks

Through the use of educational design research, the candidate designed a professional master's degree on sensory integration for occupational therapists delivering sensory integration services in the South African context. It is her wish that this curriculum, once delivered, would open up an additional, specialist career pathway for occupational therapists delivering sensory integration services in South Africa. Not only would it advance service delivery to all those who were in need of it, but it would also expand the

knowledge base at an international level on sensory integration service delivery in a developing country such as South Africa.

Although this was the candidate's first attempt to design a professional master's degree, her hope is that it will inspire future researchers in the field, not only in understanding how educational design research contributed to this specific curriculum but also in cultivating an awareness of the relevance of the use of educational design research in the design of curriculums, especially in the profession of occupational therapy.

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ANNEXURE A ETHICS COMMITTEE APPROVAL LETTER

UNIVERSITY OF THE
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Ms J du Plessis/gn

2014-10-30

REC Reference nr 230408-011
IRB nr 00006240

MRS A VAN JAARVELD
DEPT OF OCCUPATIONAL THERAPY
FACULTY OF HEALTH SCIENCES
UFS

Dear Mrs Van Jaarsveld

ECUFS NR 179/2014
MRS A VAN JAARVELD
PROJECT TITLE: EDUCATIONAL DESIGN RESEARCH: DESIGNING A FIRST PROFESSIONAL
MASTER'S CURRICULUM FOR SENSORY INTEGRATION TRAINING WITHIN THE SOUTH
AFRICAN CONTEXT

DEPT OF OCCUPATIONAL THERAPY


1. You are hereby kindly informed that the study was approved at the Ethics Committee meeting held on 16 October 2014.
 - *Comment: Individual permission has to be obtained from the participants before the start of the second phase.*
2. Committee guidance documents: Declaration of Helsinki, ICH, GCP and MRC Guidelines on Bio Medical Research. Clinical Trial Guidelines 2000 Department of Health RSA; Ethics in Health Research: Principles Structure and Processes Department of Health RSA 2004; Guidelines for Good Practice in the Conduct of Clinical Trials with Human Participants in South Africa, Second Edition (2006); the Constitution of the Ethics Committee of the Faculty of Health Sciences and the Guidelines of the SA Medicines Control Council as well as Laws and Regulations with regard to the Control of Medicines.
3. Any amendment, extension or other modifications to the protocol must be submitted to the Ethics Committee for approval.
4. The Committee must be informed of any serious adverse event and/or termination of the study.
5. All relevant documents e.g. signed permission letters from the authorities, institutions, changes to the protocol, questionnaires etc. have to be submitted to the Ethics Committee before the study may be conducted (if applicable).
6. A progress report should be submitted within one year of approval of long term studies and a final report at completion of both short term and long term studies.

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7. Kindly refer to the ETOVS/ECUFS reference number in correspondence to the Ethics Committee secretariat.
8. Thus, this letter only serves as conditional approval.

Yours faithfully



.....
PROF WH KRUGER
CHAIR: ETHICS COMMITTEE

ANNEXURE B CRITERIA CHECKLIST FOR A PROFESSIONAL MASTER'S DEGREE

CRITERIA CHECKLIST FOR A PROFESSIONAL MASTER'S DEGREE		
Does the designed curriculum adhere to the criteria?		Y/N
1. Qualification requirements		
1.1	Degree describes the broad fields of the programme.	
1.2	If relevant a maximum of one specific qualifier is added.	
1.3	Qualification have a minimum of 180 total credits.	
1.4	Credit allocation is done in terms of modules, mounting up to the total qualification credit.	
1.5	Qualification is professionally-orientated geared towards high-level cognitive engagement to advance knowledge towards a profession and specialised services as stipulated in NQF Level 9 for a professional master's degree.	
2. Outcomes pertaining to the qualification		
2.1	Curriculum is designed according to an outcomes-based approach.	
2.2	Generic learning outcomes of the curriculum are aligned with the NQF level 9 and its qualification descriptors.	
2.3	Specific learning outcomes are compared to and anchored in the relevant level descriptors.	
2.4	States the learning that is necessary to achieve the intended outcomes.	
2.5	Required competencies are reflected in the learning outcomes.	
2.6	Outcomes are clear, there is alignment between outcomes, exit level, and teaching and learning activities.	
3. Structural elements		
3.1	There is alignment and internal consistency between curricular components.	
3.2	Curriculum is 'built' considering the local context and is relevant for service delivery needs of the country.	
3.3	Work-integrated learning forms part of learning experiences.	
3.4	A single research or technical project or a series of smaller projects demonstrating innovation or professional expertise research comprising of at least a quarter of the total credits forms part of the qualification.	
4. Assessment		
4.1	NQF Exit Level 9 outcomes guide the specific outcomes and assessment developed for the curriculum.	
4.2	Types of assessment needs are identified and integrated into the curriculum.	
4.3	Underpinning competencies that will be assessed are integrated in the specific outcomes.	
4.5	Standards guiding learning and assessment are reflected in the outcomes to serve as assessment criteria.	
4.6	Types of assessment needs are identified and integrated into the curriculum.	
4.7	Expected standard of performance, quality and where relevant the context and conditions are described.	
4.8	Assessment is inclusive of a range of assessment activities.	
4.9	Clarity in terms of assessment and assessment activities exists.	

ANNEXURE C LETTER OF INVITE TO INTERNATIONAL EXPERTS IN SENSORY INTEGRATION

Dear

I am an occupational therapist by profession and have been involved in undergraduate and postgraduate student training for the last 19 years. I am holding a position as lecturer in the Department of Occupational Therapy, University of the Free State, South Africa (SA). At national level, I am involved with the South African Institute for Sensory Integration (SAISI) and lectures on the Sensory Integration (SI) training courses. On international level, I am also involved in the International Coalition for Education in Sensory Integration (ICESI) and therefore quality training within the field of sensory integration is a non-negotiable for me.

SAISI is currently the only organisation in SA that provides training in ASI® theory, assessment and intervention on a national level. Although SAISI is busy with the process, their courses are not currently accredited by the South Africa Qualification Authority (SAQA) but are however nationally and internationally recognised. SAISI's courses are aligned with and have been presented in collaboration with the University of Southern California and Western Psychological Services' (USC/WPS) until 2013. Although training in SI is highly sought after and often set as a requirement for OTs working within the paediatric field in SA there are currently no South African university that offers programmes specializing in sensory integration. The SI training courses are thus currently not part of a formal curriculum pathway, acknowledged by the Council of Higher Education in SA, which exists into an accredited specialised domain of knowledge in sensory integration on a master's degree level.

The South African Higher Education Qualifications Framework (HEQF) has since 2013 provided for a professionally-orientated master's qualification that recognises need for high level skills within professions. This is not a research focused qualification, but a professionally orientated degree that will develop professionals for specialised services and that will educate and train graduates who can contribute to the development of knowledge and skills at an advanced level. SI is one of the specialist fields within occupational therapy that has developed into a particular focus area based on advanced theory and professional practice, and is thus well positioned for master's degree studies. This new qualification type will thus eminently be suitable for a

professional master's degree for OTs who aspire to specialise in SI as part of their professional pathway, as no SI qualification currently exists at this level in SA.

The demand for such a master's degree programme already exists in SA, and the question that I want to answer through a doctoral study is: "What would be an internationally authoritative and acknowledged, curriculum for a professional master's degree in SI, presented in SA with its own unique realities, that will allow students to exit with identified attributes of specialised knowledge on SI, specialised, professional competencies and skills in assessment, intervention and consultation, as well as research skills that will contribute to the current body of SI knowledge and research?". One of the challenges presented in this study will be to take a highly researched and specialised subfield of an established profession, for which the opportunity of a professional master's degree now exists, and where the expertise and guidance are provided by a first world country, and to develop a locally relevant curriculum that will address the needs and realities of our society and that of a profession of a country such as SA that is faced with realities of first- and third worlds.

Currently no guidelines or other contextually relevant SI curriculum exists that can be used for developing or against which a curriculum that is developed can be benchmarked and therefore educational design research will be utilized as approach and method within this study as it allows for systematically studying and designing a curriculum whilst also developing knowledge for future use on the design process and principles of a curriculum. An intended curriculum that will be ready for implementation will be designed and will include an ideal curriculum (consisting of the vision & underpinning philosophy) and the formal curriculum (consisting of the curriculum intentions as prescribed in documents and/or materials). In the process of developing the curriculum, knowledge on the design process and design principles will also be systematically written up for possible future use in developing similar professional master's degrees within other fields of the profession.

Design research allows for both qualitative- and quantitative methods and although both will be employed within this study, it is foreseen that mainly qualitative methods of data generation will be implemented within this design process. An educational research design consists of three different phases, a preliminary phase in which relevancy and consistency are determined. A second phase, referred to as the intervention phase, is an iterative process of designing and re-designing where practicality and expected effectiveness are developed and a third phase, referred

to as the evaluation phase, where actual effectiveness is established. This research project will only include the first two phases mentioned. The evaluation phase will be rolled out after the implementation of the curriculum. The reason for concluding the research project just before the evaluation phase is that for implementation of the curriculum, factors come into play that cannot be controlled, such as approval of the curriculum by the institution and the South African Qualifications Authority and that could have an “unending” effect on this research project.

The research phase in which I invite you to participate is in the preliminary phase. I will be conducting semi-structured e-mail interviews with six to eight international experts as already described. It is envisaged that the experts will provide personalized views, opinions and perceptions on core knowledge and competencies needed as well as what constitutes a master clinician within the field of sensory integration. I am of the opinion that international experts also have a ‘subjective voice’ that will add value and credibility to the envisaged training curriculum. It is envisaged that after the first round of question that will initiate the process will be followed up by two or three rounds of further questions. The aim will be to limit each round to three or four questions in an effort to keep these e-mail interviews time friendly yet productive and reflective in terms of generating valuable data. These qualitative interviews will allow participants to share their views and from the data gathered, patterns and generalizations will contribute to knowledge for further use in the designing the first version of the intended curriculum.

Participation will be held confidential at all times from my side and all information received will be de-identified. I will remove all possible identifiers from received e-mails by cutting and pasting the text of the e-mail into word format documents and that will be used for analyses. I will make use of codes for identification purposes and names of participants will only be for my own knowledge. Printing of any responses will only be done after text has been de-identified and converted into word format. E-mails will be deleted and trashed. The text that you will provide, will be analysed through the use of ATLAS.ti™. Text will be coded, in order to identify categories from which it is foreseen that themes will emerge and established. The information obtained in this stage of data generation will be used throughout the rest of the research. I will employ strategies that will ensure a high level of trustworthiness, credibility, and transferability, such as triangulation of multiple data sources or data of e.g. different experts as and when applicable, and member checking will also be done.

There will be no personal incentives or rewards for participation, but the reward will hopefully be on the level of the contribution that you will be making to our profession and the training of OTs from SA within the field of SI. I am committed to give due credit to all who have assisted, supported and contributed to this research project. You will have the right to withdraw from the research at any time without consequences

In participating in this research, I will also accept that you are granting permission for the publication of the results in the format of a thesis, publication in peer reviewed journals and/or presentation at congresses.

Your participation will be highly appreciated and if you are willing to participate I will be thankful if you could reply on this e-mail confirming your participation. I will then send you an e-mail with the semi-structured questions to respond on.

Thank you and kind regards,



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Appointed by Department of Higher Education, UFS as Promotor
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Faculty of Health Sciences, UFS
Tel No: 051-4013319

Health Sciences Research Ethics Committee, Faculty of Health Sciences of the University of the Free State can be contacted at (051) 405 2812.

Master's degree in occupational therapy (Sensory Integration) (M OT (SI))

General qualification specifications:

Design requirements as set by SAQA:

1. NQF level 9
2. 180 credits
3. 1-3 years
4. Outcomes based curriculum
5. Develop high level skills that will prepare for advanced and specialized professional employment (not research based).

M OT (SI) qualification outcomes are to:

1. Produce a specialist occupational therapist in the field of sensory integration (MOT-SI) who can contribute to the development of knowledge and skills at an advanced level.
2. Provide the MOT-SI with an understanding of the breadth of ASI[®]-related and underpinning knowledge that will equip him/her to deliver specialist services in this field and that will be internationally recognised.
3. Equip the MOT-SI with a critical awareness of current challenges and/or new insights in the field of sensory integration to address the complexities of sensory integration services in the SA context.
4. Develop a sense of equity, justice and service ethics in the OT-SI that will ensure accountability irrespective of their work environment.
5. Communicate effectively and appropriately on ASI[®]-relevant matters to a range of audiences.
6. Promote the importance of mentorship and scholarship in the field of sensory integration.
7. Foster a wide range of transferable skills for application in other settings, disciplines and general life. These include:
 - a. The ability to plan, implement and manage projects
 - b. The ability to work independently and as part of a team.

- c. The ability to influence policies in terms of change, development and implementation.
8. Have a systematic understanding of the breadth of ASI®-related and underpinning knowledge, with a critical awareness of current problems and/or new insights, informed by the forefront of their clinical field / area of professional practice. The areas of professional practice / clinical fields may be helpfully construed around four pillars of research, advocacy, education, and clinical practice.
9. Demonstrate conceptual understanding that enables the student to critically evaluate current research, as related to ASI®.
10. Demonstrate originality in the application of knowledge, together with a practical understanding of how established techniques of research and enquiry are used to create and interpret knowledge.
11. Evaluate methodologies, develop critiques of them and identify gaps in terms of research, services, and advocacy
12. Communicate effectively and appropriately complex ASI®-relevant material to a range of audiences, dependent on need.

Modules:

6. Theoretical foundations
7. Assessment and intervention over the lifespan
8. ASI and diverse populations
9. Local and global landscape of sensory integration
10. Research project

**ANNEXURE E LETTER TO SOUTH AFRICAN SI EXPERTS HOLDING
ACADEMIC POSTS AT UNIVERSITIES ALSO LECTURING ON
SAISI TRAINING COURSES**

Dear

As an expert within the field of training in ASI® sensory integration together with background and experience within the higher education field, I would like to thank you for your willingness to participate in a PhD study that I am currently conducting through the University of the Free State on 'designing a curriculum for a professional occupational therapy master's degree in sensory integration'. The title of my thesis is "Educational Design Research: Designing a professional master's curriculum for sensory integration training within the South African Context".

The South African Higher Education Qualifications Framework (HEQF) has since 2013 provided for a professionally-orientated master's qualification that recognises need for high level skills within professions. This is not a research focused qualification, but a professionally orientated degree that will develop professionals for specialised services and that will educate and train graduates who can contribute to the development of knowledge and skills at an advanced level. Sensory integration is one of the specialist fields within occupational therapy that has developed into a particular focus area based on advanced theory and professional practice, and is thus well positioned for master's degree studies. This new qualification type will thus eminently be suitable for a professional master's degree for OTs who aspire to specialise in sensory integration as part of their professional pathway, as no sensory integration qualification currently exists at this level in SA.

One of the challenges presented in this study is to take a highly researched and specialised subfield of an established profession, for which the opportunity of a professional master's degree now exists, and where the expertise and guidance are provided by a first world country, and to develop a locally relevant curriculum that will address the needs and realities of our society and that of a profession of a country such as SA that is faced with realities of first- and third worlds.

Currently no guidelines or other contextually relevant sensory integration curriculum exists that can be used for developing or against which a curriculum that is developed can be benchmarked and therefore educational design research will be utilized as approach and method within this study as it allows for systematically studying and designing a curriculum whilst also developing knowledge for future use on the design process and principles of a curriculum. An intended curriculum that will be ready for implementation is currently been designed and will when completed include an ideal curriculum (consisting of the vision & underpinning philosophy) and the formal curriculum (consisting of the curriculum intentions as prescribed in documents and/or materials). In the process of developing the curriculum, knowledge on the design process and design principles are also been systematically written up for possible future use in developing similar professional master's degrees within other fields of the profession.

Design research allows for both qualitative- and quantitative methods and although both will be employed within this study, it is foreseen that mainly qualitative methods of data generation will be implemented within this design process. An educational research design consists of three different phases, a preliminary phase in which relevancy and consistency are determined and the first version of the intended curriculum will be designed. A second phase, referred to as the intervention phase, is an iterative process of designing and re-designing where practicality and expected effectiveness are developed and a third phase, referred to as the evaluation phase, where actual effectiveness is established. This research project will only include the first two phases mentioned. The evaluation phase will be rolled out after the implementation of the curriculum. The reason for concluding the research project just before the evaluation phase is that for implementation of the curriculum, factors come into play that cannot be controlled, such as approval of the curriculum by the institution and the South African Qualifications Authority and that could have an "unending" effect on this research project.

The research phase in which you will now be participating in is in the second phase (the intervention phase). I am in the process of obtaining experts opinions, comments etc. on the current identified competencies that have been identified by international experts within the field of SI, the qualification outcomes and possible modules. I have attached a draft model of the framework consisting just of competencies (i.t.o. knowledge, skills and competencies) together with the programme outcomes and modules to the email. These documents will also be the focus of the Skype interview that we will be having on Monday 16 January 2017 at 9:00 am. The aim of

the interview/discussion will be to obtain your expert opinions, comments, perceptions, views and recommendations on the current identified competencies, the qualification outcomes and modules. I have drafted a guideline of questions that will be discussed during the interview, but other questions might also evolve during the discussions. The document with the questions are also attached to the email.

The feedback received will contribute to knowledge for further use in the designing of the consecutive version of the model and might also contribute to other components of the intended curriculum.

Participation will be held confidential at all times and all information received will be de-identified and you will have the right to withdraw from the research at any time without consequences. The data generated during this session will be analysed using ATLAS.ti™. Text will be coded, in order to identify categories from which it is foreseen that themes will emerge and established. The information obtained in this stage of data generation can also be used throughout the rest of the research. I will employ strategies that will ensure a high level of trustworthiness, credibility, and transferability, such as triangulation of multiple data sources or data of e.g. different experts as and when applicable, and member checking will also be done.

There will be no personal incentives or rewards for participation, but the reward will hopefully be on the level of the contribution that you will be making to our profession and the training of OTs from SA within the field of SI. I am committed to give due credit to all who have assisted, supported and contributed to this research project.

In participating in this research, I accept that you are granting permission for the publication of the results in the format of a thesis, publication in peer reviewed journals and/or presentation at congresses.

Your participation is highly appreciated and I am looking forward to our session on Monday.

Thank you and kind regards,



Annamarie van Jaarsveld
E-mail: gnavaj@ufs.ac.za
Tel No: +27 (0)51-4012829
Cell No: +27 (0)837178196

Promotor: Dr Nalize Scheepers
Appointed by Department of Higher Education, UFS as Promotor
Cell No: 0713556322

Co-Promotor: Dr S van Vuuren, School for Allied Health Professions,
Faculty of Health Sciences, UFS
Tel No: 051-4013319

Health Sciences Research Ethics Committee, Faculty of Health Sciences of the University of the Free State can be contacted at (051) 405 2812.

ANNEXURE F FRAMEWORK FOR SKYPE INTERVIEW WITH SOUTH AFRICAN ASI® EXPERTS

Background information:

Design requirements as set by SAQA:

1. NQF level 9
2. 180 credits
3. 1-3 years for completion
4. Outcomes based curriculum
5. Develop high level skills that will prepare for advanced and specialized professional employment (not research based).

Design requirements set by research question:

1. Internationally acknowledged curriculum.
2. SA context must be calculated and addressed.

DISCUSSION POINTS AND QUESTIONS FOR SKYPE INTERVIEW

Purpose: to “check” design ideas and obtain views, opinions and recommendations:

1. Comments/feedback on the composition of the curriculum
 - Knowledge
 - Skills
 - Attitude
2. Comments/feedback on the levels of organization of the curriculum.
3. Comments/feedback on outcomes set thus far.
4. To what extent does the curriculum address the realities within the SA context?
5. Are there any elements that needs to be added?
6. Comments on identified modules
7. Possibilities regarding research project/activities

8. Ideas on learning experiences to address specific competencies
9. Ideas on assessment methods of specific competencies
10. Design of curriculum to determine already obtained competencies
11. Design of curriculum as competence monitoring tool?

Professional master's degree in occupational therapy (Sensory Integration)

M OT (SI) qualification outcomes are to:

- Produce a specialist occupational therapist in the field of sensory integration (MOT-SI) who can contribute to the development of knowledge and skills in the field of sensory integration, at an advanced level.
- Provide the MOT-SI with an understanding of the breadth of ASI®-related and underpinning knowledge that will equip him/her to deliver specialist services in this field and that will be internationally recognised.
- Equip the MOT-SI with a critical awareness of current challenges and/or new insights in the field of sensory integration to address the complexities of sensory integration services in the South African context.
- Consolidate a sense of equity, justice and service ethics in the MOT-SI that will ensure accountability irrespective of their work environment.
- Develop competencies that will allow the MOT-SI to effectively and appropriately talk on and discuss complex ASI®-relevant matters to a range of audiences, dependent on need.
- Cultivate a MOT-SI that will contribute to the growth and consolidation of mentorship and scholarship in the field of sensory integration.
- Broaden the MOT-SI competencies in terms of transferable skills for application in other settings, disciplines and general life. These include:
 - The ability to plan, implement and manage projects
 - The ability to work independently and as part of a team.
 - The ability to influence policies in terms of change, development and implementation.
- Systematically expand the MOT-SI's understanding of the breadth of ASI®-related and underpinning knowledge, with a critical awareness of current problems and/or new insights, informed by the forefront of their clinical field / area of professional practice. The areas of professional practice / clinical fields may be around any of the four pillars of research, advocacy, education, and clinical practice.
- Increase the MOT-SI's ability to demonstrate originality in the application of knowledge, together with a practical understanding of how established techniques of research and enquiry are used to create and interpret knowledge and design of products.
- Develop the MOT-SI's competences to evaluate methodologies, develop critiques of them and identify gaps in terms of research, services, and advocacy.

Proposed Modules and Module Outcomes of Curriculum M OT (SI) Version 2

Module 1: Theoretical foundations

- Applied Neuro Science
- Advanced ASI® Theory
- ASI® and Occupation
- ASI® Research

Module outcomes:

The specialist MOT-SI will be able to apply theoretical foundational knowledge to clinically reason on cases, resolve complex issues in the field and teaching of others on sensory integration related topics, in the process of delivering specialised services.

Specific outcomes:

After the successful completion of this module the specialist MOT-SI will be able to:

- Convey fundamental knowledge on neuro-science as applied to SI, ASI® theory and research, and ASI® and occupation in discussions with peers, written assignments and case presentations.
- Apply the mentioned fundamental knowledge and clinically reason on it in case management and case presentations.
- Defend reasoning and decision making on sensory integration difficulties and dysfunctions in writing during case studies and verbally during peer discussions.
- Illustrate ability to take on the role of advocacy for sensory integration services by way of a pre-determined assignment.
- Demonstrate knowledge of health disparities in South Africa and the impact thereof on sensory integration services by means of an assignment.
- Critique intervention methods related or derived from ASI® during an assignment.
- Provide proof and reflect on importance of long-life scholarship in ASI® through documentation in portfolio.
- Provide proof of a predetermined activity that could be included in portfolio of conscious engagement in national and/or international activities to promote ASI®.
- Become a mentor for a junior colleague in the field of ASI and provide evidence thereof in a portfolio.

Module 2: Lifespan Assessment and Intervention

- Babies to Elderly
- Client and Occupational Profiles
- Diverse Populations
 - Pathologies
 - 1st to 3rd World Environments

Module Outcomes:

The specialist MOT-SI will be able to deliver and/or coordinate comprehensive specialist sensory integration services to clients from over the lifespan and in a variety of settings.

Specific outcomes:

After the successful completion of this module the specialist MOT-SI will be able to:

- Make decisions regarding relevant assessment and intervention strategies for clients throughout the lifespan and provide evidence thereof in portfolio.
- Demonstrate advanced ASI® assessment and interpretation skills during case study presentations and case discussions always considering the person, occupation and environment.
- Reason on the different sensory integration dysfunctions as identified through research during assignments and group discussions
- Demonstrate ASI® assessment and intervention planning through the use of a data driven decision-making process in case studies.
- Demonstrate skills in applying ASI® intervention during videotaped intervention sessions and adhering to ASI® Fidelity Measure.
- Deliver sensory integration services that are equal and just in terms of person and environment and provide evidence thereof in portfolio.
- Demonstrate knowledge on the affordances of sensory integration equipment during an assignment.
- Provide evidence in written format of been mentored in at least two case studies.

Module 3: ASI® and the South African Context

- Philosophical grounding for Afrocentric and Western approaches
- ASI® in different contexts (Private Practice, Hospitals, Schools, Primary Health Care, Communities)
- ASI® translated to group settings

Module outcomes:

The specialist MOT-SI will be able to ground knowledge of ASI® services in an Afrocentric as well as Western philosophical approach when reasoning on and planning services for different South African contexts. She will be able to deliver services to individuals and groups in different environments always adhering to best practice principles.

Specific outcomes:

After the successful completion of this module the specialist MOT-SI will be able to:

- Produce verbal and written proof of knowledge and understanding of an Afrocentric as well as Western approach by managing two cases in two different settings where the approaches will be relevant and the person, environment and occupation are addressed.
- Demonstrate knowledge on ASI® and diverse populations during case presentations as pre-determined.
- Illustrate knowledge and understanding on primary health care and communities and the realities of delivering MOT-SI services on this level, through the completion of an assignment.
- Adapt ASI® assessment and intervention in predetermined different settings by staying as true as possible to ASI® Fidelity Measure and by sharing adaptations during discussion session.
- Design or adapt sensory integration equipment that are relevant for under-resourced environments for which the proof thereof is included in a portfolio.
- Demonstrate transfer of ASI® knowledge abilities in at least two different pre-determined scenarios by manner of video recordings.

Module 4: Research

- Research theory supporting project
- Research execution: Case Study/Product Design/Theory (publishable article)

Module outcomes:

Implementation of a research project that will contribute to either theory, case studies or product design that could lead to a publishable article in a peer reviewed journal.

Specific outcomes:

After the successful completion of this module the specialist MOT-SI will be able to:

- Identify at least three current gaps in ASI® research that can be addressed
- Decide on a research focus and formulate a research question
- Develop a research protocol
- Execute research project
- Write up research in article format

ANNEXURE H PERMISSION LETTER TO SAISI FOR USE OF DATA BASE

Mrs RA Cook
Chairperson
SAISI
PO Box 14510
Hatfield
0028

Dear Mrs Cook

I am currently conducting a PhD study through the University of the Free State on 'designing a curriculum for a professional occupational therapy master's degree in sensory integration'.

As you know, SAISI is currently the only organisation in SA that provides training in ASI® theory, assessment and intervention on a national level. SAISI courses are not currently accredited by the South Africa Qualification Authority (SAQA) but are however nationally and internationally recognised. Although training in sensory integration is highly sought after and often set as a requirement for occupational therapists working within the paediatric field in SA there are currently no South African university that offers programmes specializing in sensory integration. The sensory integration training courses are thus currently not part of a formal curriculum pathway, acknowledged by the Council of Higher Education in SA, which exists into an accredited specialised domain of knowledge in sensory integration on a master's degree level.

The South African Higher Education Qualifications Framework (HEQF) has since 2013 provided for a professionally-orientated master's qualification that recognises need for high level skills within professions. This is not a research focused qualification, but a professionally orientated degree that will develop professionals for specialised services and that will educate and train graduates who can contribute to the development of knowledge and skills at an advanced level. Sensory integration is one of the specialist fields within occupational therapy that has developed into a particular focus area based on advanced theory and professional practice, and is thus well positioned for master's degree studies. This new qualification type will thus eminently be suitable for a professional master's degree for occupational therapists who aspire to specialise in sensory integration as part of their professional pathway, as no sensory integration qualification currently exists at this level in SA.

The demand for such a master's degree programme already exists in SA, and the question that I want to answer through a doctoral study is: "What would be an internationally authoritative and acknowledged, curriculum for a professional master's degree in SI, presented in SA with its own unique realities, that will allow students to exit with identified attributes of specialised knowledge

on SI, specialised, professional competencies and skills in assessment, intervention and consultation, as well as research skills that will contribute to the current body of sensory integration knowledge and research?" One of the challenges presented in this study will be to take a highly researched and specialised subfield of an established profession, for which the opportunity of a professional master's degree now exists, and where the expertise and guidance are provided by a first world country, and to develop a locally relevant curriculum that will address the needs and realities of our society and that of a profession of a country such as SA that is faced with realities of first- and third worlds.

Currently no guidelines or other contextually relevant sensory integration curriculum exists that can be used for developing or against which a curriculum that is developed can be benchmarked and therefore educational design research will be utilized as approach and method within this study as it allows for systematically studying and designing a curriculum whilst also developing knowledge for future use on the design process and principles of a curriculum. An intended curriculum that will be ready for implementation will be designed and will include an ideal curriculum (consisting of the vision & underpinning philosophy) and the formal curriculum (consisting of the curriculum intentions as prescribed in documents and/or materials). In the process of developing the curriculum, knowledge on the design process and design principles will also be systematically written up for possible future use in developing similar professional master's degrees within other fields of the profession.

A design research approach will be used and allows for both qualitative- and quantitative methods and although both will be employed within this study. An educational research design consists of three different phases, a preliminary phase in which relevancy and consistency are determined and the first version of the intended curriculum will be designed. A second phase, referred to as the intervention phase, is an iterative process of designing and re-designing where practicality and expected effectiveness are developed and a third phase, referred to as the evaluation phase, where actual effectiveness is established.

The research phase in which I want to use the member e-mail address data base of occupational therapists that have completed their sensory integration training through SAISI will be during the preliminary phase of the research. The main purpose for the use of quantitative survey research will be to obtain numeric data on the perceived levels of competencies gained during training on the SAISI courses, their levels of satisfaction, other competencies gained, as well as any additional needs they can identify in terms of knowledge and skills. This data will be obtained by using an electronic questionnaire compiled by the researcher. A preliminary questionnaire has already been developed and is also attached hereto for your information, but it is foreseen that this will change once a document review and semi-structured interviews with international experts have been concluded. The quantitative data of a greater number of participants will add value and credibility to findings, and will provide support for the decision-making process in the construction of the curriculum.

There will be no personal incentives or rewards for participation. Reward will hopefully also be on the level of the contribution that participants will be making to our profession and the training of occupational therapists from SA within the field of sensory integration. I am committed to give due credit to all who have assisted, supported and contributed to this research project. I am of the opinion that the publication of the results of this research and specifically the results from this part of the research may also be of benefit to SAISI in their mission of delivering sensory integration courses that address the needs of their consumers.

The results of this research will also be published in the format of a thesis, presented for publication in peer reviewed journals and/or presentation at congresses.

Your consent for the use of the address data base of SAISI will be highly appreciated.

Thank you and kind regards,



Annamarie van Jaarsveld
E-mail: gnavaj@ufs.ac.za
Tel No: +27 (0)51-4012829
Cell No: +27 (0)837178196

If you so wish you may contact my study-leader:
Dr Nalize Marais
E-mail: nalize@pedagogix.co.za
Cell No: +271 355 6322

Should you have any queries regarding ethical matters please contact Mrs Maré Marais (Head of Ethics Administration) at Tel: 051 401 7795

ANNEXURE I QUESTIONNAIRE FOR OCCUPATIONAL THERAPISTS WHO HAS COMPLETED SAISI TRAINING COURSES

ANNEXURE I: QUESTIONNAIRE FOR OT'S WHO HAVE COMPLETED SAISI TRAINING COURSES

		<i>For office use only</i>										
		<input type="text"/> <input type="text"/> <input type="text"/> 1-3 Participant no										
1	Demographic questions											
1.1	In what year did you obtain your basic OT degree?	<input type="text"/> <input type="text"/> 4-5										
	<table border="1" style="display: inline-table; border-collapse: collapse;"> <tr> <td style="width: 25px; text-align: center;">y</td> <td style="width: 25px; text-align: center;">y</td> <td style="width: 25px; text-align: center;">y</td> <td style="width: 25px; text-align: center;">y</td> </tr> </table>	y	y	y	y							
y	y	y	y									
1.2	Do you have a formal post graduate qualification?	<input type="text"/> 6										
	<table border="1" style="display: inline-table; border-collapse: collapse;"> <tr> <td style="width: 40px; text-align: center;">Yes</td> <td style="width: 40px; text-align: center;">No</td> </tr> </table>	Yes	No									
Yes	No											
1.2.1	If you have answered yes in 1.2 please indicate below	<input type="text"/> 7										
	<table border="1" style="display: inline-table; border-collapse: collapse;"> <tr> <td style="width: 25px; text-align: center;">1</td> <td>Master's degree</td> </tr> <tr> <td style="width: 25px; text-align: center;">2</td> <td>Doctoral degree</td> </tr> </table>	1	Master's degree	2	Doctoral degree	<input type="text"/> 8						
1	Master's degree											
2	Doctoral degree											
1.3	For how many full years have you been treating children/individuals experiencing Sensory Integration difficulties? (Need not be cont)	<input type="text"/> <input type="text"/> 9-10										
	<table border="1" style="display: inline-table; border-collapse: collapse;"> <tr> <td style="width: 40px;"></td> <td style="width: 40px;"></td> </tr> </table> years											
1.4	In what year did you complete your Sensory Integration Training courses?	<input type="text"/> 11										
	<table border="1" style="display: inline-table; border-collapse: collapse;"> <tr><td style="width: 40px; text-align: center;">2006</td></tr> <tr><td style="width: 40px; text-align: center;">2007</td></tr> <tr><td style="width: 40px; text-align: center;">2008</td></tr> <tr><td style="width: 40px; text-align: center;">2009</td></tr> <tr><td style="width: 40px; text-align: center;">2010</td></tr> <tr><td style="width: 40px; text-align: center;">2011</td></tr> <tr><td style="width: 40px; text-align: center;">2012</td></tr> <tr><td style="width: 40px; text-align: center;">2013</td></tr> <tr><td style="width: 40px; text-align: center;">2014</td></tr> <tr><td style="width: 40px; text-align: center;">2015</td></tr> </table>	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	
2006												
2007												
2008												
2009												
2010												
2011												
2012												
2013												
2014												
2015												
2	Questions related to the SAISI courses											
2.1	Indicate your opinion on your level of knowledge on Ayres Sensory Integration Sensory Integration (ASI®) theory and brain function:											
2.1.1	before attending the Theory Course	<input type="text"/> 12										
	<table border="1" style="display: inline-table; border-collapse: collapse;"> <tr> <td style="width: 40px;"></td> <td>Basic</td> </tr> <tr> <td style="width: 40px;"></td> <td>Intermediate</td> </tr> <tr> <td style="width: 40px;"></td> <td>Advanced</td> </tr> <tr> <td style="width: 40px;"></td> <td>Specialist</td> </tr> </table>		Basic		Intermediate		Advanced		Specialist			
	Basic											
	Intermediate											
	Advanced											
	Specialist											

2.1.2 after completion of the Theory Course

	Basic
	Intermediate
	Advanced
	Specialist

13

2.2 Indicate your opinion on your level of Sensory Integration & Praxis Tests' (SIPT) administration skills after completion of the Test Administration Course

	Basic
	Intermediate
	Advanced
	Specialist

14

2.3 Indicate your opinion on your level of knowledge on the interpretation of the SIPT directly after the course

	Basic
	Intermediate
	Advanced
	Specialist

15

2.4 Indicate your opinion on your level of knowledge on the interpretation of the SIPT after successful completion of the protocol

	Basic
	Intermediate
	Advanced
	Specialist

16

2.5 Indicate your opinion on your level of knowledge on Ayres Sensory Integration (ASI®) intervention directly after the treatment course

	Basic
	Intermediate
	Advanced
	Specialist

17

2.6 Indicate your opinion on your level of skill of Ayres Sensory Integration (ASI®) treatment directly after the treatment course

	Basic
	Intermediate
	Advanced
	Specialist

18

2.7 Indicate your level of satisfaction related to the listed competencies / skills gained after completion of the four SI qualification courses
Using a rating scale of 1-4 by circling the relevant number
1 = not satisfied at all 2 = limited level of satisfaction
3 = moderate level of satisfaction 4 = high level of satisfaction

2.7.1 Clinical reasoning skills

1	2	3	4
---	---	---	---

 19

2.7.2 Skill to relate SI and Praxis difficulties/dysfunctions to engagement/ performance/ occupation

1	2	3	4
---	---	---	---

 20

2.7.3 Skill to develop a sensory-based intervention plan, providing a rationale with relevant and supporting evidence/data

1	2	3	4
---	---	---	---

 21

2.7.4 Skill to develop meaningful and measurable goals and outcomes within the ASI® framework

1	2	3	4
---	---	---	---

 22

2.7.5 Skill in providing ASI® intervention in a systematic, evidence-based way, where outcomes are measured and recorded

1	2	3	4
---	---	---	---

 23

2.7.6 Competency to verbally communicate accurately on SI difficulties/dysfunctions with relevant others

1	2	3	4
---	---	---	---

 24

2.7.7 Competency to communicate accurately in writing on SI difficulties/dysfunctions with relevant others

1	2	3	4
---	---	---	---

 25

2.7.8 Except for already mentioned competencies/skills, did you attain any other competencies during the completion of the SAISI training courses that you would like to mention?

 26-27

 28-29

 30-31

2.7.9 In order of priority, which learning experiences contributed the most to the knowledge and competencies that you gained during the four SAISI courses?

 32-33

 34-35

 36-37

4 Questions related to the use of the SIPT

4.1 How often do you use the SIPT?

<input type="checkbox"/>	Use it on all the children that are referred to me	<input type="checkbox"/>	67
<input type="checkbox"/>	Use it only on children that I suspect may have SI difficulties		
<input type="checkbox"/>	Use it only when requested to do so		
<input type="checkbox"/>	Use it only for re-assessment purposes		
<input type="checkbox"/>	Use it once in a while to stay updated with its use		
<input type="checkbox"/>	Never use it		

**4.2 If you never use the SIPT, what are the reason?
More than one reason can be ticked**

<input type="checkbox"/>	Too expensive	<input type="checkbox"/>	68
<input type="checkbox"/>	Takes too long to administer and score	<input type="checkbox"/>	69
<input type="checkbox"/>	Too complex to administer	<input type="checkbox"/>	70
<input type="checkbox"/>	Not applicable for age group I deliver a service too	<input type="checkbox"/>	71
<input type="checkbox"/>	Do not have confidence in the results of the tests	<input type="checkbox"/>	72
<input type="checkbox"/>	Other	<input type="checkbox"/>	73

4.3 If you have ticked 'other' in 4.2 please provide your reasons for not using the SIPT

<input type="checkbox"/>	<input type="checkbox"/>	74-75
<input type="checkbox"/>	<input type="checkbox"/>	76-77
<input type="checkbox"/>	<input type="checkbox"/>	78-79

4.4 Which other standardised test/s do you use to assess SI functions with?

<input type="checkbox"/>	<input type="checkbox"/>	80-81
<input type="checkbox"/>	<input type="checkbox"/>	82-83
<input type="checkbox"/>	<input type="checkbox"/>	84-85

5 Professional career pathway

5.1 If the opportunity arose, which of the following qualifications do you think you would be interested in (mark all applicable)?

<input type="checkbox"/>	Post Graduate Diploma in SI	<input type="checkbox"/>	86
<input type="checkbox"/>	Professional Master degree in SI	<input type="checkbox"/>	87
<input type="checkbox"/>	Professional Doctoral degree in SI	<input type="checkbox"/>	88
<input type="checkbox"/>	None of the above	<input type="checkbox"/>	89

THANK YOU, YOUR PARTICIPATION IS HIGHLY APPRECIATED

ANNEXURE J: INFORMATION AND INVITE TO OTS WHO HAS COMPLETED SAISI TRAINING COURSES

A: Content of e-mail letter:

Dear SAISI member,

This e-mail is sent to you as a member who has successfully completed her sensory integration training through SAISI. I am currently conducting a PhD study through the University of the Free State and would like to invite you to participate in the study. The aim of this study is to “design a curriculum for a professional occupational therapy master’s degree in sensory integration”. Your experience of the SAISI training process forms an integral and important part of the design and construction phase of the research design process that I am using. Please use the link underneath to access the questionnaire.

<http://surveys.ufs.ac.za/evasys/online.php?p=3J2A2>

I would highly appreciate it if you could complete the survey by A letter with more detail about this study is attached, should you want more information.

Thanking you for your time,

Annamarie van Jaarsveld
gnatavj@ufs.ac.za

Disclaimer relating to facilitation of distribution of survey / research questionnaires by SAISI

The South African Institution of Sensory Integration (SAISI) provides services for the distribution of research questionnaires by external / independent individuals and research facilities among members of SAISI.

All surveys and research are distributed in good faith without verification. SAISI cannot be held responsible for the content of surveys / research distributed by the service. SAISI do not review surveys or pages for content before they are posted, and do not verify, endorse or otherwise take responsibility for the contents of any surveys or pages created by a user of the Service ("Users").

Information, including personal information, submitted by persons participating in a survey which use the Service ("Survey Respondents") should be sent directly to the researchers / facility who is undertaking the research / survey and NOT to SAISI. Survey Respondents should refer to the particular user to understand the privacy / confidentiality requirements and protections applicable to the specific survey or questionnaire. SAISI does not review, comment upon, or

monitor its Users' compliance with their respective privacy policies or applicable privacy laws. SAISI is not responsible to Survey Respondents for the privacy practices of Users. Survey Respondents who provide Users with data and other information do so at their own risk. Survey Respondents should contact the User concerning the objectives of the survey / research, their ability to access and make changes to information they have provided to the User.

Please note: SAISI does not have access to research or survey results and do not undertake to provide any feedback, publish any results or be involved in any manner whatsoever in the research / survey. Should survey respondents want information about the survey results/outcomes, the User should be contacted directly.

B: Information letter that was attached to e-mail:

Dear

As an occupational therapist (OT) who completed their sensory integration training courses through South African Institute for Sensory Integration (SAISI), I would like to invite you to participate in an online questionnaire as part of a PhD study that I am currently conducting through the University of the Free State on 'designing a curriculum for a professional occupational therapy master's degree in sensory integration'.

As you know, SAISI is currently the only organisation in SA that provides training in ASI® theory, assessment and intervention on a national level. SAISI courses are not currently accredited by the South Africa Qualification Authority (SAQA) but are however nationally and internationally recognised.

The South African Higher Education Qualifications Framework (HEQF) has since 2013 provided for a professionally-orientated master's qualification that recognises need for high level skills within professions. This is not a research focused qualification, but a professionally orientated degree that will develop professionals for specialised services and that will educate and train graduates who can contribute to the development of knowledge and skills at an advanced level. Sensory integration is one of the specialist fields within occupational therapy that has developed into a particular focus area based on advanced theory and professional practice, and is thus well positioned for master's degree studies. This new qualification type will thus eminently be suitable for a professional master's degree for OTs who aspire to specialise in sensory integration as part of their professional pathway, as no sensory integration qualification currently exists at this level in SA.

The demand for such a master's degree programme already exists in SA, and the question that I want to answer through a doctoral study is: "What would be an internationally authoritative and acknowledged, curriculum for a professional master's degree in SI, presented in SA with its own unique realities, that will allow students to exit with identified attributes of specialised knowledge

on sensory integration, specialised, professional competencies and skills in assessment, intervention and consultation, as well as research skills that will contribute to the current body of sensory integration knowledge and research?" One of the challenges presented in this study will be to take a highly researched and specialised subfield of an established profession, for which the opportunity of a professional master's degree now exists, and where the expertise and guidance are provided by a first world country, and to develop a locally relevant curriculum that will address the needs and realities of our society and that of a profession of a country such as SA that is faced with realities of first- and third worlds.

An educational design research approach is used and allows for both qualitative- and quantitative methods and although both will be employed within this study. An educational research design approach consists of three different phases, a preliminary phase in which relevancy and consistency are determined and the first version of the intended curriculum are in the process of been designed. A second phase, referred to as the intervention phase, is an iterative process of designing and re-designing where practicality and expected effectiveness are developed and a curriculum ready for implementation will be produced and a third phase, referred to as the evaluation phase, where actual effectiveness is established.

The research phase in which I invite you to participate is in the second phase (the design and construction phase). One of the data generating methods are the use of a quantitative questionnaire which will be completed online. The main purpose for the use of quantitative survey research within this phase will be to obtain numeric data on perceptions and views of OTs who have successfully completed the courses regarding experiences, levels of satisfaction, competencies gained by OTs on the SAISI courses as well as any additional needs they can identify in terms of knowledge and skills. Basic demographic information is also requested. The quantitative data of a greater number of participants will add value and credibility to findings, and will provide support for the decision-making process in the construction of the curriculum. SAISI has already approved the use of their e-mail lists of members who have completed their sensory integration training through SAISI since 2008 (the first year that OT's finished the SAISI qualification process using the SIPT as measuring instrument).

Participation in this online survey will be anonymous as the survey is done through the use of EvaSys a market leading group of computerized software for organisational surveys and research projects.

There will be no personal incentives or rewards for participation. Reward will hopefully also be on the level of the contribution that participants will be making to our profession and the training of OTs from SA within the field of sensory integration I am committed to give due credit to all who have assisted, supported and contributed to this research project. I am of the opinion that the publication of the results of this research and specifically the results from this part of the research may also be of benefit to SAISI in their mission of delivering sensory integration courses that address the needs of their consumers.

The results of this research will also be published in the format of a thesis, presented for publication in peer reviewed journals and/or presentation at congresses. In participating in this research, I will also accept that you are granting permission for the publication of the results in the format of a thesis, publication in peer reviewed journals and/or presentation at congresses.

Thank you for your consideration and kind regards,



Annamarie van Jaarsveld
E-mail: gnavaj@ufs.ac.za
Tel No: +27 (0)51-4012829
Cell No: +27 (0)837178196

Promotor: Dr Nalize Scheepers
Appointed by Department of Higher Education, UFS as Promotor
Cell No: 0713556322

Co-Promotor: Dr S van Vuuren, School for Allied Health Professions,
Faculty of Health Sciences, UFS
Tel No: 051-4013319

Health Sciences Research Ethics Committee, Faculty of Health Sciences of the University of the Free State can be contacted at (051) 405 2812.

ANNEXURE K LETTER TO OCCUPATIONAL THERAPISTS WORKING IN THE FIELD OF SENSORY INTEGRATION

Dear Occupational Therapist,

You have been approached to participate a PhD study that I am currently conducting through the University of the Free State on 'designing a curriculum for a professional occupational therapy master's degree in sensory integration'. The title of my thesis is "Educational Design Research: Designing a professional master's curriculum for sensory integration training within the South African Context". Thank you for your willingness to consider participating.

The background of this PhD study is as follow:

The South African Higher Education Qualifications Framework (HEQF) has since 2013 provided for a professionally-orientated master's qualification that recognises need for high level skills within professions This is not a research focused qualification, but a professionally orientated degree that will develop professionals for specialised services and that will educate and train graduates who can contribute to the development of knowledge and skills at an advanced level. sensory integration is one of the specialist fields within occupational therapy that has developed into a particular focus area based on advanced theory and professional practice, and is thus well positioned for master's degree studies. This new qualification type will thus eminently be suitable for a professional master's degree for occupational therapists (OTs) who aspire to specialise in sensory integration as part of their professional pathway, as no sensory integration qualification currently exists at this level in SA.

One of the challenges presented in this study is to take a highly researched and specialised subfield of an established profession, for which the opportunity of a professional master's degree now exists, and where the expertise and guidance are provided by a first world country, and to develop a locally relevant curriculum that will address the needs and realities of our society and that of a profession of a country such as SA that is faced with realities of first- and third worlds.

Currently no guidelines or other contextually relevant sensory integration curriculum exists that can be used for developing or against which a curriculum that is developed can be benchmarked

and therefore educational design research will be utilized as approach and method within this study as it allows for systematically studying and designing a curriculum whilst also developing knowledge for future use on the design process and principles of a curriculum. An intended curriculum that will be ready for implementation is currently been designed and will when completed include an ideal curriculum (consisting of the vision & underpinning philosophy) and the formal curriculum (consisting of the curriculum intentions as prescribed in documents and/or materials). In the process of developing the curriculum, knowledge on the design process and design principles are also been systematically written up for possible future use in developing similar professional master's degrees within other fields of the profession.

Design research allows for both qualitative- and quantitative methods and although both will be employed within this study, it is foreseen that mainly qualitative methods of data generation will be implemented within this design process. An educational research design consists of three different phases, an analyses and exploration phase in which relevancy and consistency are determined and the first version of the intended curriculum was designed. A second phase, referred to as the intervention phase, is an iterative process of designing and re-designing where practicality and expected effectiveness are developed and a third phase, referred to as the evaluation phase, where actual effectiveness is established. This research project will only include the first two phases mentioned. The evaluation phase will be rolled out after the implementation of the curriculum. The reason for concluding the research project just before the evaluation phase is that for implementation of the curriculum, factors come into play that cannot be controlled, such as approval of the curriculum by the institution and the South African Qualifications Authority and that could have an "unending" effect on this research project.

Due to your qualification and/or experience I am requesting your participation in a focus group (or groups) for one or more of the following reasons:

1. You are working in an under resourced or rural area where there are definite challenges to deliver an OT-SI service and sharing your experiences could make a valuable contribution to the design of the curriculum.
2. You have obtained your master's degree or are in the process thereof and I would like to share the second version of the curriculum with you and obtain your opinion on it. I will especially be interested in your views on the master's process and what could be challenges and possibilities.

The research phase in which you will be participating in is in the second phase (design and construction. The focus groups/s will be facilitated by Juanita Swanepoel an OT experienced in qualitative research and presentation of focus groups. I will also be present during the focus groups to do the introductions and to take field notes. The feedback received will contribute to knowledge for further use in the designing of the consecutive version of the curriculum and will also contribute to other components of the intended curriculum.

The focus groups will take place on 10 March 2017 at Ray Anne Cook's house. A session will not be longer than an hour and a half. Ray Anne or myself will confirm the time slots with you but we will start at 8:30 am with the first focus group. Refreshments will be available throughout the time and should you be there over lunch time, a light lunch will be served.

Participation will be held confidential at all times and all information received will be de-identified and you will have the right to withdraw from the research at any time without consequences. The data generated during this session will be recorded, transcribed and analysed using ATLAS.ti™. Text will be coded, in order to identify categories from which it is foreseen that themes will emerge and established. The information obtained in this stage of data generation can also be used

throughout the rest of the research. I will employ strategies that will ensure a high level of trustworthiness, credibility, and transferability, such as triangulation of multiple data sources or data of e.g. different experts as and when applicable, and of needed member checking will also be done.

There will be no personal incentives or rewards for participation, but the reward will hopefully be on the level of the contribution that you will be making to our profession and the training of OTs from SA within the field of sensory integration. I am committed to give due credit to all who have assisted, supported and contributed to this research project.

In participating in this research, I accept that you are granting permission for the publication of the results in the format of a thesis, publication in peer reviewed journals and/or presentation at congresses.

Your participation is highly appreciated and I am looking forward to the focus groups.

Thank you and kind regards,



Annamarie van Jaarsveld
E-mail: gnavaj@ufs.ac.za
Tel No: +27 (0)51-4012829
Cell No: +27 (0)837178196

If you so wish you may contact my study-leader:
Dr Nalize Marais
E-mail: nalize@pedagogix.co.za
Cell No: +271 355 6322

Should you have any queries regarding ethical matters please contact Mrs Maré Marais (Head of Ethics Administration) at Tel: 051 401 7795

ANNEXURE L FRAMEWORK FOR FOCUS GROUP WITH OCCUPATIONAL THERAPISTS DELIVERING SENSORY INTEGRATION SERVICES IN RURAL OR UNDER-RESOURCED ENVIRONMENTS

Opinion of occupational therapists who already have obtained a master's degree (or are in the process) on own journey and on Prototype 2 of curriculum for Professional Master's Degree OT (SI):

Background information:

Design requirements as set by SAQA:

6. NQF level 9
7. 180 credits
8. 1-3 years
9. Outcomes based curriculum
10. Develop high level skills that will prepare for advanced and specialized professional employment (not research based).

Design requirements set by research thus far:

3. Internationally authoritative and acknowledged curriculum.
4. SA context must be calculated and addressed throughout (PEO and SA realities to be at the core of curriculum).
5. Gaining theoretical knowledge through application.
6. No formal examinations.

PURPOSE: To gather information from participants on own master's journey and obtain views and opinions of version 2 of the designed curriculum that will contribute to a version 3 of the curriculum that can be presented to curriculum experts for their opinion.

Objectives:

- To obtain range of views and opinions on what are contributors and stumbling blocks in a master's journey
- To uncover factors that influences OT's in their master's journey
- To discuss views and opinions on of version 2 of the curriculum regarding proposed, learning experiences, assessment, research and mode of delivery

TOPICS TO BE DISCUSSED:

Master's journey

12. Perceptions and opinions of own highlights and challenges of master's degree journey with the purpose of providing the curriculum designer with information of what should be avoided and what contributes to experiences of success.

Prototype 2 of curriculum

13. Opinions on proposed modules
14. Comments/feedback on the proposed learning experiences
15. Opinion on assessment activities
16. Opinion on the curriculum and addressing the realities within the SA context
17. Opinion on presentation mode of curriculum:
 - Combination of contact and distance
 - What is viable?
18. Opinion on purposed research project/activities?
19. Any other comments/contributions

Opinion of occupational therapists who already have obtained a master's degree (or are in the process) on own journey and on Prototype 2 of curriculum for Professional Master's Degree OT (SI):

Background information:

Design requirements as set by SAQA:

11. NQF level 9
12. 180 credits
13. 1-3 years
14. Outcomes based curriculum
15. Develop high level skills that will prepare for advanced and specialized professional employment (not research based).

Design requirements set by research thus far:

7. Internationally authoritative and acknowledged curriculum.
8. SA context must be calculated and addressed throughout (PEO and SA realities to be at the core of curriculum).
9. Gaining theoretical knowledge through application.
10. No formal examinations.

PURPOSE: To gather information from participants on own master's journey and obtain views and opinions of version 2 of the designed curriculum that will contribute to a version 3 of the curriculum that can be presented to curriculum experts for their opinion.

Objectives:

- To obtain range of views and opinions on what are contributors and stumbling blocks in a master's journey
- To uncover factors that influences OT's in their master's journey
- To discuss views and opinions on of version 2 of the curriculum regarding proposed, learning experiences, assessment, research and mode of delivery

TOPICS TO BE DISCUSSED:

Master's journey

1. Perceptions and opinions of own highlights and challenges of master's degree journey with the purpose of providing the curriculum designer with information of what should be avoided and what contributes to experiences of success.

Prototype 2 of curriculum

2. Opinions on proposed modules
3. Comments/feedback on the proposed learning experiences
4. Opinion on assessment activities
5. Opinion on the curriculum and addressing the realities within the SA context
6. Opinion on presentation mode of curriculum:
 - Combination of contact and distance
 - What is viable?
7. Opinion on purposed research project/activities?
8. Any other comments/contributions



ANNEXURE N HARD COPY OF POWERPOINT FOR FOCUS GROUP M OTS

**EDUCATIONAL DESIGN RESEARCH:
DESIGNING A PROFESSIONAL MASTER'S
CURRICULUM FOR SENSORY INTEGRATION
TRAINING WITHIN THE SOUTH AFRICAN
CONTEXT**

PHD FOCUS GROUPS
10 MARCH 2017
CAPE TOWN
FACILITATOR: JUANITA SWANPOEL



VERSION 2 OF OUTCOMES OF THE INTENDED CURRICULUM



PROPOSED MODULES

1. THEORETICAL FOUNDATIONS
 - APPLIED NEURO SCIENCE
 - ADVANCED ASI THEORY
 - ASI RESEARCH
2. LIFESPAN ASSESSMENT & INTERVENTION
 - BABIES TO ELDERLY
 - DIVERSE POPULATIONS
3. ASI & SOUTH AFRICAN CONTEXT
 - ASI IN DIFFERENT ENVIRONMENTS
 - ASI IN GROUP SETTINGS
4. RESEARCH PROJECT
 - RESEARCH THEORY SUPPORTING PROJECT
 - RESEARCH EXECUTION: CASE STUDY / PRODUCT DESIGN / THEORY (PUBLISHABLE ARTICLE)



SA CONTEXT AND REALITIES

- COVERAGE OF LIFESPAN
- CONTEXTS:
 - PP
 - SCHOOLS
 - HOSPITALS
 - NGO'S
 - COMMUNITY
- EQUIPMENT & DESIGN
- DIVERSE POPULATIONS:
 - PATHOLOGY
 - 1ST TO 3RD WORLD ENVIRONMENTS
- RELEVANCE OF GLOBAL PERSPECTIVE OF ASI



PROPOSED LEARNING EXPERIENCES

- SELF STUDY (ESPECIALLY RELATED TO THEORETICAL FOUNDATIONS)
- ON-LINE ASSIGNMENTS
- CHOICE ASSIGNMENTS
- CASE WORK
- VIDEOS: DISCUSSION OF EXPERT SESSIONS
 DISCUSSION OF OWN SESSIONS
- MENTORING
- WORKPLACE-BASED LEARNING



ASSESSMENT

- ON-LINE DISCUSSION BOARDS
- ASSIGNMENTS
- VIDEOS
- ON-LINE CASE PRESENTATIONS
- PORTFOLIOS




RESEARCH PROJECT

- NB KNOWLEDGE CREATION WITHIN THE SA CONTEXT BUT CONTRIBUTING GLOBALLY
- CASE STUDY
- PRODUCT DESIGN
- THEORY



VERSION 2 OF OUTCOMES OF THE INTENDED CURRICULUM & PROPOSED MODULES



1. THEORETICAL FOUNDATIONS
 - APPLIED NEURO SCIENCE
 - ADVANCED ASI THEORY
 - ASI RESEARCH
2. LIFESPAN ASSESSMENT & INTERVENTION
 - INFANTS TO ELDERLY
 - DIVERSE POPULATIONS
3. ASI & SOUTH AFRICAN CONTEXT
 - ASI IN DIFFERENT ENVIRONMENTS
 - ASI IN GROUP SETTINGS
4. RESEARCH PROJECT
 - RESEARCH THEORY SUPPORTING PROJECT
 - RESEARCH EXECUTION: CASE STUDY/PRODUCT DESIGN/THEORY (PUBLISHABLE ARTICLE)

PROTOTYPE 3 OF THE CURRICULUM

Master's degree in Occupational Therapy (Sensory Integration)

Total credits: 224

M.OT (SI) qualification outcomes are to:

- Produce a specialist occupational therapist within the field of sensory integration (MOT-SI) who can influence and contribute to the field at an advanced level.
- Provide the specialist MOT-SI with an understanding of the breadth of ASI-related and underpinning knowledge that will equip the MOT-SI to deliver specialist services within this field and that will be internationally acknowledged.
- Equip the specialist MOT-SI with a critical awareness of current challenges and/or new insights within the field of sensory integration to address the complexities of sensory integration services within the South African context.
- Consolidate a sense of equity, justice and service ethics within the specialist MOT-SI that will ensure accountability and reflexivity, irrespective of the work environment.
- Develop competencies that will allow the specialist MOT-SI to proficiently articulate (verbally and in writing) complex SI-relevant matters to a range of audiences, dependent on need.
- Broaden the specialist MOT-SI competencies in terms of transferable skills for application in other settings, disciplines and general life. These include the abilities to:
 - Critically appraise, select and justify theory, services and 'best practice',
 - Plan, implement and manage projects,
 - Work independently and as part of a team,
 - Influence policies in terms of change, development and implementation.

- Systematically expand the specialist MOT-SI's critical awareness of current problems and/or new insights, informed by the forefront of their clinical field / area of professional practice.
- Foster a culture of inquiry through the use of the specialist MOT-SI's reasoning skills, expanded professional expertise within the field of sensory integration by developing innovative ideas or contributing knowledge within the field of ASI.
- Increase the specialist MOT-SI's ability to demonstrate originality in the application of knowledge, together with a practical understanding of how established techniques of research and enquiry are utilised to create and interpret knowledge and design products.
- Develop the specialist MOT-SI's competences to evaluate and critique methodologies, and identify gaps in terms of research, services, and advocacy.
- Throughout the qualification process cultivate specialist MOT-SI with competencies that will foster and support advanced scholarship by solving complex problems within field of sensory integration, contributing to the ethical standards of ASI service delivery within the South African context and to emerge as a leader within the field of sensory integration in SA.

GENERAL INFORMATION:

- Pre-requisites:
1. B. OT degree or B.Sc. OT Degree.
 2. Successful completion of the SASIC 1-4 courses presented by SAISI or an acknowledged equivalent thereof.
 3. At least three years' experience, post graduate, in a specific field of interest, where ASI was practiced.

Delivery mode: The M OT in Sensory Integration will be delivered via a mixed-mode of delivery. Candidates are required to attend a compulsory block contact session early in each term with monthly scheduled skype sessions. Teaching and learning activities includes workshops during the contact sessions, self-study, online activities (the candidate is required to interact with peers, mentors and lecturers)

case studies (theoretical and practical) and a hybrid of work integrated learning modalities. Pre-constructed cases and real clinical cases will be the primary vehicle through which students will attain the necessary knowledge, skills and attitudes. Through extensive engagement with cases and set learning experiences that will include continued reflection and feedback, students will advance and actualize specialist ASI-SI competencies.

Fundamental features:

1. Learning experiences will be integrated into a case driven approach to learning therefor students must have access to cases from over the lifespan that experience sensory integration difficulties and dysfunctions. Three cases from student's field of experience of ASI will be identified to work with during the two-year qualification period. An additional two cases that are diverse from the student's field of experience will also be identified to work with during the qualification period. The case load of each student will be identified in consultation with an academic mentor, assigned to the student, to ensure a case load that is representative of the lifespan and the realities of the South African context
2. Each student will be allocated to a primary "academic" mentor at the beginning of the programme that will journey with them during the process of obtaining the qualification. This primary mentor will support the student in, decision making processes regarding suitable cases, reflection/discussions needed during assignments, projects etc., and will assist in the development of the specialist MOT-SI. Students will also receive clinical mentoring from an acknowledged mentor within the field of sensory integration during the two-year period.
3. A research project (Module 4) will commence once module 1 and 2 has been successfully completed. This project will be done under the

supervision of a study leader and the nature and topic of the research will be decided on in collaboration with the student, academic mentor and study leader.

4. Students will be co-designers of their learning by collaborating with their academic mentor on learning experiences that will optimise their competency acquisition and thereby acknowledging that each student will enter this qualification with a unique set of already obtained knowledge, skills and attitude.
5. The delivery of the curriculum will start with an introductory day where students will be prepared for the qualification and for taking ownership of their own master's journey. Meetings with academic mentors will take place and planning regarding each student's study pathway will be done.

Assessment of four modules: Modules 1, 2 and 3 includes activities of continuous formative assessment, by means of informal, formal and structural assessment activities with no formal exams. (The argument here is that students have to demonstrate consistent attainment of a broad range of competencies and no one formative exam will be just in deciding whether the student has been successful or not).
Module 4 consists of formative assessments and a final summative assessment of the research report. All four modules must be successfully completed for the qualification to be awarded.

Progression: Modules 1 and 2 will serve as foundations for Modules 3 and 4. Module 1 will build on knowledge gained at undergraduate level as well as knowledge gained during the SAISI training courses. Content of the module will contribute to knowledge of core theoretical foundations which will support and inform the application thereof in teaching and learning activities not only of the specific module but also in the module 2 running co-currently. Competencies gained in

module 1 will also provide a theoretical foundation for the two modules following once modules 1 and 2 were successfully completed. Module 2 is focused on attaining competencies that will contribute to comprehensive specialist sensory integration service delivery within the field of sensory integration, It will also provide the student with a solid foundation for dealing with the realities of the South African context presented in Module 3. The student will have in depth knowledge of the field that will serve as a solid foundation for making decisions on research topics for module 4.

Module 3 and 4 will be completed once Modules 1 and 2 have been successfully completed. Module 3 will equip the student with competencies to plan and deliver sensory integration services for contexts' varying from Western to Afrocentric, using knowledge, skills and attitudes attained in modules 1 and 2. The research module (module 4) will equip the student not only with competencies related to research and the communication thereof but additionally foster an embracing attitude towards the importance of research within the field.

Extended progression will be possible but in line with the institutions policy.

Recognition of Prior Learning (RPL): The University of the Free State supports recognition of prior learning and students that have prior learning experiences and are convinced that they have already gained competencies indicated in the curriculum and will be able to provide proof thereof can apply and submit themselves to the prescribed RPL process of the University of the Free State.

MODULES OF CURRICULUM M. OT (SI) VERSION 3

Module 1: Theoretical foundations	Themes: <ul style="list-style-type: none"> • Applied Neuro Science • Advanced ASI Theory • ASI & Occupation • ASI Research
Credits: 32	
Module outcome: The specialist MOT-SI will be able to apply theoretical foundational knowledge of applied neuro science, occupation and participation, and ASI theory and research in the process of planning and delivering specialised ASI services.	
Specific outcomes: After the successful completion of this module the specialist MOT-SI will be able to: <ul style="list-style-type: none"> • Convey fundamental knowledge to peers on neuro-science as applied to sensory integration, ASI theory and research, and ASI and occupation. • Apply fundamental knowledge in clinical reasoning process during management of cases. • Defend reasoning and decision making on sensory integration difficulties and dysfunctions based on fundamental knowledge of applied neuro-science, ASI theory and research, and sensory integration as a Frame of Reference. • Evaluate and critique assessment and intervention methods related or derived from Jean Ayres theory of sensory integration based on knowledge of the scope and limitations of the field. 	
Teaching and learning activities with relevant assessment	
<ul style="list-style-type: none"> • Self-study (Formative) 	<ul style="list-style-type: none"> • Reading related to fundamental theoretical underpinnings and relevant to each of the themes will be required. Topics requiring comprehensive reviews will be provided. Assessment will be done through the completion of online questionnaires.
<ul style="list-style-type: none"> • Lectures (Formative) 	<ul style="list-style-type: none"> • Formal lectures on specific advanced theoretical themes will be delivered. Assessment of the ability to understand and apply theoretical knowledge on hypothetical cases will be done on-line and feedback will be provided.
<ul style="list-style-type: none"> • Student led discussions (Formative) 	<ul style="list-style-type: none"> • Face-to-face and on-line student led discussion groups where preparation to argue on theoretical constructs related to one of cases will be required. Demonstration of fundamental knowledge and the application thereof related to a case will be assessed. • Preparing a set of theoretical topics for discussion in face-to-face and on-line discussion groups. Knowledge,

	<p>participation and critical and constructive contribution to discussions will be peer assessed and feedback provided by lecturers.</p>
<ul style="list-style-type: none"> • Case presentations (Formative) 	<ul style="list-style-type: none"> • Preparing cases for discussion within groups. The focus of group discussions will be on ASI assessment findings and intervention planning related to the case's occupational engagement. Arguing and defending of findings, intervention planning and impact on occupational engagement within the group will be the focus. Depth of knowledge on ASI assessment and intervention, impact on occupational engagement, ethical decision making and ability to clinically reason will be assessed and feedback provided by lecturers.
<ul style="list-style-type: none"> • Presentations (Formative) 	<ul style="list-style-type: none"> • Presenting one of cases in a seminar where foundational theoretical knowledge is provided as evidence to the audience that needs to be persuaded on the necessity of ASI services. Students ability to convey professional and specialist knowledge and make independent and appropriate decisions will be assessed and feedback provided. • Preparing and presenting assessment and intervention methods related or derived from Ayres work and lead an evaluation and critique session within peer group. Students demonstration of knowledge on the scope and limitations of ASI, related/derived sensory measures and methods and student's ability to argue on different modalities will be assessed and discussion-based feedback will be provided.
<p>Final assessment of module:</p>	<p>All assessment activities will contribute to final module mark. A final mark of 50% is required to pass.</p>

Module 2: Lifespan Assessment and Intervention	Themes: <ul style="list-style-type: none"> • Babies to Elderly <ol style="list-style-type: none"> 1. Client & Occupational Profiles • Diverse Populations <ol style="list-style-type: none"> 1. Pathologies 2. Afrocentric versus Western approaches to ASI • Case Management
Credits: 64	
Module Outcomes: The specialist MOT-SI will be able to deliver and/or coordinate comprehensive specialist sensory integration services to clients from over the lifespan in a variety of settings and always to the highest ethical standards.	
Specific outcomes: After the successful completion of this module the specialist MOT-SI will be able to: <ul style="list-style-type: none"> • Make independent decisions regarding relevant ASI® assessment and intervention strategies for clients throughout the lifespan and in various settings and environments. • Demonstrate advanced ASI® assessment and interpretation skills, verbally and documented, during case management, always considering the person, occupation and environment. • Provide skill and attitudinal evidence during case management of a deep understanding of the challenges and struggles that individuals and their families experience when confronted with sensory integration difficulties/dysfunctions. • Provide evidence of mentoring experiences, by an acknowledged mentor within the field of ASI®. • Communicate findings of cases, verbally and in writing, to professionals and parents/caregivers. • Reason and make sound judgments on the different sensory integration dysfunctions as identified through research during case management, case presentations and discussions. • Demonstrate advanced ASI® assessment and intervention planning skills of cases, using a data driven decision making process and thereby adhering to best practice. • Demonstrate skills of applying ASI® intervention that adheres to ASI® Fidelity Measure, during videotaped and simulated intervention sessions. • Plan and deliver sensory integration services to cases that are appropriate, equitable and just in terms of person and environment, with an acute receptiveness towards those who do not have access to OT-SI services in simulated and real-world settings. • Demonstrate knowledge on the affordances of sensory integration equipment and the effective application thereof during workshops, simulated and videotaped intervention sessions. 	

<ul style="list-style-type: none"> • Possess the ability to self-critique own ASI® assessment and intervention with the necessary insight during reflection on videotaped sessions and during workshops. • Proven ability to make autonomous ethical decisions in delivering of specialist OT-SI services for cases involved in teaching and learning process. • Provide documented evidence of activities contributing to life-long scholarship within the field of ASI®. • Demonstrate the ability to take on the role of advocacy for sensory integration services by providing evidence thereof. • Rate peer ASI intervention sessions successfully with the ASI®-Fidelity Measure under the guidance of a supervisor. • Provide evidence and reflect on importance of self-direction and life-long scholarship in ASI®. • Provide evidence of a self-directed activity of conscious engagement in national and/or international activities with the aim of promoting ASI®. 	
Teaching and learning activities with relevant assessment	
Reflective journaling (Formative)	Reflection on work-based experiences will be done to develop and refine own conceptual understanding of ASI® service delivery. Reflections will be part of formative assessment.
Workshops (Formative)	Practically engaging in advanced ASI® assessment and intervention with demonstration of advanced practical skills in ASI® assessment and intervention. Video recordings will be made during workshop and reflected on as part of formative assessment.
Case studies (Formative)	<ul style="list-style-type: none"> • Arguing on decisions taken in the therapeutic process of cases regarding ASI® assessment and intervention and the impact thereof on of person, occupation and environment during group case presentations. Discussion and reflections will serve as formative assessment. • Preparing, documenting and presenting of motivated recommendations regarding appropriate, equitable and just ASI® services for diverse cases and in different settings where the presentation will be peer assessed and the documentation formatively assessed. • Presentation of a case that provide proof of specialist MOT-SI's understanding of challenges experienced by individual and family due to sensory integration difficulties/dysfunctions, which will be assessed by peers and lecturers and formative feedback provided after presentations.
On-line discussion board (Formative)	Discussion of solutions for complex cases on discussion board according to guidelines. Contribution to discussion and possible solutions will be discussed and feedback provided as part of formative assessment.

Case management workshop and presentations (Formative)	Developing and designing different components of data driven decision making process and present case studies verbally and in writing demonstrating ability to use data driven decision making process as part of best-practice during case management. Evidence of data-driven decision-making process will be assessed and formative feedback provided.
Simulation (Formative)	<ul style="list-style-type: none"> • Plan and execute intervention session in simulated environments reflecting competencies to deliver OT-SI services in Western and rural/community settings. • Delivering ASI® intervention in a clinical skills unit with standardized “patients”.
Video presentations (Formative)	<ul style="list-style-type: none"> • Presentation of video recordings of own cases regarding feedback sessions with parents/educators/professionals will be assessed and formative feedback provided. • Presentation of video recordings of intervention sessions where after student will reflect on clinical reasoning during sessions for assessment purposes and formative feedback will be provided. • Submission ASI®-Fidelity Measure video recordings of intervention sessions for successful rating and feedback.
Expert video recording discussions (Formative)	Group discussions on observations and insights after watching expert videos on ASI®. Participation and contribution to group discussion will be assessed.
Case discussions (Formative)	<ul style="list-style-type: none"> • Presentation and reasoning on case management on an advanced level, where decisions made, level of reasoning, assessments done, findings made and planning of intervention will be assessed and feedback provided. • Demonstration of the ability to argue on an advanced level on different sensory integration dysfunctions and discuss influence of sensory integration difficulties/dysfunctions on person, environment and occupation of cases in diverse settings. Argumentation and applied knowledge will be assessed and feedback provided.
On-line discussion board	Analyses and discussion of affordances and use of equipment in diverse settings. Contributions to discussion board will be formatively assessed.
Project (Formative)	Submission of a project where evidence of the student’s competency in terms of advocacy for ASI® is demonstrated. Competency in advocacy for ASI® will be assessed formatively.
Rating (Formative)	Rating of peer intervention sessions under supervision according to ASI®-Fidelity Measure. In depth discussion with

	trained ASI-FM trained rater will form part of formative assessment.
Portfolio (Formative)	<ul style="list-style-type: none"> Evidence in portfolio on activities supportive of self-direction and scholarship (barriers and enablers). Evidence of activities of self-direction and scholarship will be assessed and formative feedback will be provided by academic mentor. Evidence in portfolio of self-initiated efforts to contribute nationally and internationally within the field of ASI needs to be documented and submitted for assessment. Formative feedback will be provided by academic mentor.
Mentoring (Formative)	Submission of mentoring reports and reflections that will be assessed in terms of insight and depth thereof together with formative feedback from mentors.
Final assessment of module:	All assessment activities will contribute to a final module mark. A final mark of 50% is required to pass.

<p>Module 3: ASI and the South African Context</p>	<p>Themes:</p> <ul style="list-style-type: none"> Philosophical grounding for Afrocentric and Western approaches ASI in different contexts (Private Practice, Hospitals, Schools, Primary Health Care, Communities) ASI translated to group settings Transfer of ASI knowledge in diverse settings
<p>Credits: 64</p>	
<p>Module outcomes:</p> <p>The specialist MOT-SI will be able to ground knowledge of ASI services in an Afrocentric as well as Western philosophical approach when reasoning on and planning services for different South African contexts. The specialist MOT-SI will be able to deliver services to individuals and groups in different environments always adhering to the highest ethical standards and best practice principles.</p>	
<p>Specific outcomes:</p> <p>After the successful completion of this module the specialist MOT-SI will be able to:</p> <ul style="list-style-type: none"> Produce written proof of knowledge and understanding of an Afrocentric as well as Western philosophical approach in the use of ASI. Adapt ASI service delivery aligned with an Afro-western approach when indicated. Demonstrate verbal and written knowledge on ASI and diverse populations and contexts during case study presentations. Apply primary healthcare principle in the delivering of ASI services. Design and produce innovative service plans for specific populations and contexts and present the service plans during a formal presentation. 	

<ul style="list-style-type: none"> • Illustrate knowledge and understanding on primary health care and community-based practice and the realities of delivery or non-delivery of OT-SI services on these levels in the verbal presentation of a written assignment. • Contribute to policy changes and/or implementation of services that would benefit a population struggling with sensory integration difficulties or dysfunctions. • Adapt ASI® assessment and intervention in predetermined and diverse settings whilst staying as true as possible to ASI® Fidelity. • Design or adapt sensory integration equipment creatively that will be relevant for under-resourced environments. • Demonstrate ability to transfer ASI® knowledge on different platforms and/or scenarios. • Demonstrate ability to emerge as mentor within the field of ASI®, mentoring a junior colleague and reflecting thereon in writing and submitting written reflections of the mentee. 	
Teaching and learning activities with relevant assessment	
Workshop and group work (Formative)	Practical engagement in problem solving on real-world issues within the South African context and ASI® service delivery will be addressed in workshop format during which a real-world problem will have to be solved during group work.
On-line discussion board (Formative)	Use of discussion board to argue on relevance of Western- and Afrocentric philosophical orientations and how it influences sensory integration services and participation and contribution to understanding will be formatively.
On-line assignments (Formative)	Applying theoretical knowledge on Western- and Afrocentric philosophical orientations as they relate to the delivery of OT-SI services to one of cases, which will formatively be assessed.
Case presentation (Formative)	<ul style="list-style-type: none"> • Demonstrate knowledge of health disparities in and the impact thereof on sensory integration services managing real-life case examples. • Provide evidence of how primary health care principles were applied to deliver ASI® services within a community/rural setting.
Assignment and presentation (Formative)	Predetermined assignment on primary health care and community practice addressing the realities of OT-SI service delivery. Written assignment and verbal presentation thereof will be formatively assessed.
Documentation and case presentation (Formative)	Managing a diverse case in terms of assessment, design and implementation of an innovative service plan adhering to highest ethical principles. Written documentation and verbal presentation of identified sections of case management will be formatively assessed.

Presentations (Formative)	Presentation of a self-initiated contribution to policy or service delivery changes related to sensory integration services. A presentation of the plan will be formatively assessed.
Product design (Formative)	Development or adaptation of a product/plan to contribute/enable service delivery in a under resourced environment. The product/plan will formatively be peer assessed.
Video presentation (Formative)	Presentation of evidence by means of video recording, which will formatively be assessed, of ability to transfer ASI® knowledge to an Afro-western approach as applicable for different platforms and audiences.
Mentoring (Formative)	Mentoring sessions and experiences as mentor, with identification of challenges and strengths where written reflections of experience and discussions with academic mentor will serve as formative assessment.

Module 4: Research	Themes: <ul style="list-style-type: none"> • Research theory supporting project • Project management • Innovation/professional expertise projects
Credits: 64	
Module outcomes: The specialist MOT-SI will be competent in appraising relevant literature that will contribute to knowledge on seminal and current research within the field and successfully complete a research project that will contribute to the knowledge base of ASI®.	
Specific outcomes: After the successful completion of this module the specialist MOT-SI will be able to: <ul style="list-style-type: none"> • Discuss and argue on seminal and current research within the field of ASI®. • Identify current gaps in ASI® research that can be addressed. • Demonstrate knowledge of research project management. • Demonstrate the ability to develop a research question, aim and objectives within the field of ASI®. • Demonstrate competence in the application of knowledge of research methodologies in answering an identified research question. • Execute and complete a research project, under the guidance of a supervisor. • Communicate/disseminate research findings in a publishable format. • Exhibit an attitude of embracing the importance of research within the field of ASI®. 	
Teaching and learning activities with relevant assessment	
Group discussions (Formative)	<ul style="list-style-type: none"> • Discuss and argue on relevant and seminal research during group discussions where level of knowledge and depth of argumentation will be formatively assessed.

	<ul style="list-style-type: none"> Discuss identified research gaps in an effort to clarify and develop own research question during group discussions with study leaders and which will serve as formative assessment.
Formal lectures (Formative)	Lectures on the research process as applied to research projects will be presented and the development of a research proposal will serve as formative assessment.
Information management (Formative)	Literature needed for successful completion of this module will include academic books and research articles which will necessitate information management. Independent searches on specified topics will also be required and managed. Formative feedback will be provided on success of information management.
Assignment (Formative)	Assignment on project management using own research as 'the project' that will formatively be assessed.
Research (Formative)	Executing research as applicable for the project. Research process will be formatively assessed.
Presentation	Present a talk on the meaning of research in the becoming of a specialist MOT-SI, where the presentation will be formatively assessed
Scientific writing (Summative)	Writing up of research in a publishable article for submission in a peer reviewed journal. Summative assessment will apply for the article.
Final assessment of module:	All assessment activities will contribute to 50% of the module mark with the summative assessment of the article contributing the other 50%.

**ANNEXURE P LETTER TO INTERNATIONAL SENSORY INTEGRATION EXPERTS
ALSO INVOLVED IN INTERNATIONAL TRAINING IN ASI®**

Dear

As you know I am currently conducting a PhD study through the University of the Free State on 'designing a curriculum for a professional occupational therapy master's degree in sensory integration'. The title of my thesis is "Educational Design Research: Designing a professional master's curriculum for sensory integration training within the South African Context".

To serve as a reminder, the background of this PhD study is as follow:

The South African Higher Education Qualifications Framework (HEQF) has since 2013 provided for a professionally-orientated master's qualification that recognises need for high level skills within professions. This is not a research focused qualification, but a professionally orientated degree that will develop professionals for specialised services and that will educate and train graduates who can contribute to the development of knowledge and skills at an advanced level. Sensory integration (SI), as you know, is one of the specialist fields within occupational therapy (OT) that has developed into a particular focus area based on advanced theory and professional practice, and is thus well positioned for master's degree studies. This new qualification type will thus eminently be suitable for a professional master's degree for OTs who aspire to specialise in SI as part of their professional pathway, as no SI qualification currently exists at this level in SA. The Professional Board of Occupational Therapy Medical Orthotics and Prosthetics and Arts Therapy of the Health Professional Council of South Africa (HPCSA) does not currently hold a specialist register for occupational therapists as investigations into the need for a specialist register within the profession is an ongoing debate with no definite outcome yet. There is however informal recognition of "speciality" areas within the profession, especially for those areas for which post graduate programmes exists. The qualification that is in design as part of this research will have to go through a process of endorsement by the Professional Board of Occupational Therapy Medical Orthotics and Prosthetics and Arts Therapy of the HPCSA once the curriculum has been finalised. Endorsement of new programmes by professional bodies is required as part of the process of programme approval and accreditation. The institutional and statutory approval process will however not form part of this research project and will be undertaken once the research has been completed.

One of the challenges presented in this study was to take a highly researched and specialised subfield of an established profession, for which the opportunity of a professional master's degree now exists, and where the expertise and guidance are provided by a first world country, and to develop a locally relevant curriculum that will address the needs and realities of our society and that of a profession of a country such as SA, that is faced with realities of first- and third worlds.

Currently no guidelines or other contextually relevant SI curriculum exists that can be used for developing or against which a curriculum that is developed can be benchmarked and therefore educational design research was utilized as approach and method within this study as it allowed for systematically studying and designing a curriculum whilst also developing knowledge for future use on the design process and principles for curriculum development. An intended curriculum that will be ready for implementation is currently in its final stages of the construction and design phase of the research process. In the process of designing the curriculum, knowledge on the design process and design principles are systematically written up for possible future use in developing similar professional master's degrees within other fields of the profession.

Design research allows for both qualitative- and quantitative methods and mostly qualitative methods were used in this research process with one activity of quantitative data collection. An educational research design consists of three different phases, an analyses and exploration phase in which relevancy and consistency are determined and the first version of the intended curriculum was constructed. Figure 1, at the end of this document, depicts a summary of the research process that has been implemented and might provide more clarity. The second phase, referred to as the construction and design phase, is an iterative process of designing, constructing and re-designing where practicality and expected effectiveness of the product (curriculum in this case) are developed. The curriculum in design is currently at the end of this phase with a third prototype of the intended curriculum designed and ready for a last round of expert opinions (cf. Fig 1). The third phase, referred to as the evaluation and reflection phase, where actual effectiveness is established, also forms part of educational design research but this phase will be rolled out after the implementation of the curriculum. The reason for concluding the research project just before the evaluation phase is that for implementation of the curriculum, factors come into play that cannot be controlled, such as approval of the curriculum by the institution and the South African Qualifications Authority and that could have an "unending" effect on this research project.

I am approaching you again as part of member checking, but also due to your experience as international course presenters on ASI. I will highly appreciate your willingness to review prototype 3 of the curriculum and provide your expert opinion. The documentation attached include the following:

- A model illustrating the competencies in terms of knowledge, skills and attitudes identified as those of a master clinician within the field of SI thus far in the design process. The model was originally constructed from the data generated from the interviews that was held with international experts within the field of SI and remained core to the construction and design of the curriculum components. The researcher continuously referred back to the model to ensure that all the core competencies identified were included and that there was alignment between the competencies and the outcomes. The model is also a third version as the competencies was adapted and refined as the research process have progressed.
- A document containing the curriculum. The components identified to form part of the curriculum and that are presented in the document includes:
 - The qualification outcomes,
 - General information on pre-requisites, delivery mode, requirements, assessment, and progression,
 - Modules and their themes
 - Module outcomes with the respective specific module outcomes
 - Teaching and learning activities inclusive of relevant assessments.
- A word document of the answers that you have provided in the initial email interviews that were held last year that was part of phase one of the research process that you could use for reference purposes.

I will appreciate it if you could once again provide your expert opinion on:

1. The designed curriculum and its outcomes and whether the initial competencies that you have provided in the e-mail interview during last year are still included/represented in prototype 3. You can refer back to the attached document which is a word copy of your answers provided in the initial email interview in 2016
2. Your general opinion or any further suggestions on the curriculum as it is now.

Your involvement in this research will be held confidential at all times and all information received will be de-identified. You have the right to withdraw from the research at any time without consequences. There will be no personal incentives or rewards for participation, but the reward will hopefully be on the level of the contribution that you will be making to curriculum design and the training of OTs from SA within the field of SI. I am committed to give due credit to all who have assisted, supported and contributed to this research project.

In participating in this research, I accept that you are granting permission for the publication of the results in the format of a thesis, publication in peer reviewed journals and/or presentation at congresses and/or relevant platforms.

Your participation is highly appreciated.

Thank you and kind regards,



Annamarie van Jaarsveld

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Appointed by Department of Higher Education, UFS as Promotor
Cell No: 0713556322

Co-Promotor: Dr S van Vuuren, School for Allied Health Professions,
Faculty of Health Sciences, UFS
Tel No: 051-4013319

Health Sciences Research Ethics Committee, Faculty of Health Sciences of the University of the Free State can be contacted at (051) 405 2812.

ANNEXURE Q LETTER TO CURRICULUM EXPERTS

Dear,

I am currently conducting a PhD study through the University of the Free State on 'designing a curriculum for a professional occupational therapy master's degree in sensory integration'. The title of my thesis is "Educational Design Research: Designing a professional master's curriculum for sensory integration training within the South African Context".

The background of this PhD study is as follow:

The South African Higher Education Qualifications Framework (HEQF) has since 2013 provided for a professionally-orientated master's qualification that recognises need for high level skills within professions. This is not a research focused qualification, but a professionally orientated degree that will develop professionals for specialised services and that will educate and train graduates who can contribute to the development of knowledge and skills at an advanced level. Sensory integration (SI) is one of the 'specialist fields' within occupational therapy (OT) that has developed into a particular focus area based on advanced theory and professional practice, and is thus well positioned for master's degree studies. This new qualification type will thus eminently be suitable for a professional master's degree for OTs who aspire to specialise in SI as part of their professional pathway, as no SI qualification currently exists at this level in SA. The Professional Board of Occupational Therapy Medical Orthotics and Prosthetics and Arts Therapy of the Health Professional Council of South Africa (HPCSA) does not currently hold a specialist register for occupational therapists as investigations into the need for a specialist register within the profession is an ongoing debate with no definite outcome yet. There is however informal recognition of 'speciality' areas within the profession, especially for those areas for which post graduate programmes exist. The qualification that is in design as part of this research will have to go through a process of endorsement by the Professional Board of Occupational Therapy Medical Orthotics and Prosthetics and Arts Therapy of the HPCSA once the curriculum has been finalised. The institutional and statutory approval process will however not form part of this research project and will be undertaken once the research has been completed.

One of the challenges presented in this study was to take a highly researched and specialised subfield of an established profession, for which the opportunity of a professional master's degree now exists, and where the expertise and guidance are provided by a first world country, and to develop a locally relevant curriculum that will address the needs and realities of our society and that of a profession of a country such as SA.

Currently no contextually relevant SI curriculum exists that can be used for developing, or against which a curriculum that is developed can be benchmarked and therefore educational design research was utilized as approach and method within this study. Educational design research allowed for systematically studying and designing a curriculum whilst also developing knowledge for future use on the design process and principles for curriculum development. An intended curriculum that will be ready for implementation is currently in its final stages of the construction and design phase of the research process. In the process of designing the curriculum, knowledge on the design process and design principles are systematically written up for possible future use in developing similar professional master's degrees within other fields of the profession.

Design research allows for both qualitative- and quantitative methods and mostly qualitative methods were used in this research process with one activity of quantitative data collection. An educational research design consists of three different phases, an analyses and exploration phase in which relevancy and consistency are determined and the first version of the intended curriculum was constructed. Figure 1, at the end of this document, depicts a summary of the research process that has been implemented and might provide more clarity. The second phase, referred to as the construction and design phase, is an iterative process of designing, constructing and re-designing where practicality and expected effectiveness of the product (curriculum in this case) are developed. The curriculum in design is currently at the end of this phase with a third prototype of the intended curriculum designed and ready for a last round of expert opinions (cf. Fig 1). The third phase, referred to as the evaluation and reflection phase, where actual effectiveness is established, also forms part of educational design research but this phase will be rolled out after the implementation of the curriculum. The reason for concluding the research project just before the evaluation and reflection phase is that for implementation of the curriculum, factors come into play that cannot be controlled, such as approval of the curriculum by the institution and the South African Qualifications Authority that could have an "unending" effect on this research project.

You have been approached for an expert opinion, on the curriculum designed thus far, due to your experience and expertise within the field of curriculum development/design. I will appreciate your willingness to review Version 3 of the curriculum and provide your expert opinion by answering the five questions stated below. The documentation attached include the following:

- A model illustrating the competencies in terms of knowledge, skills and attitudes identified as those of a master clinician within the field of SI. The model was originally constructed from the data generated from e-mail interviews that was held with international experts within the field of SI and remained core to the construction and design of the curriculum. The researcher continuously referred back to the model to ensure that all the core competencies identified were included and that there was alignment between the competencies and the outcomes. The model is also a third version as the competencies were adapted and refined as the research process have progressed.

- A document containing the curriculum. The components identified to form part of the curriculum and that are presented in the document includes:
 - The qualification and its outcomes,
 - Modules and their themes
 - Module outcomes with the respective specific module outcomes
 - Teaching and learning activities inclusive of relevant assessments.

General information, some classified as qualification descriptors are also included in the curriculum document although not usually seen as part of “the curriculum”. The general information included were seen by the candidate as important descriptors to provide support in the understanding of the context of the curriculum and some naturally emerged from the data and deemed as important to include in the document. Included are the qualification type and its specification, credits, pre-requisites, delivery mode, fundamental features, general information on the assessment of the four modules and progression

I will appreciate it if you could provide your opinion as a curriculum expert on the following question:

1. Your opinion on the designed curriculum and its alignment with level 9 qualification descriptors for a professional master's degree.
2. Your opinion on the clarity of the outcomes.
3. Your opinion on whether the described teaching and learning activities will assist in the development of competencies.
4. Your opinion on the assessment activities and their relevance.
5. Any other comments regarding the curriculum in design.

Your involvement in this research will be held confidential at all times and all information received will be de-identified. You have the right to withdraw from the research at any time without consequences. The data generated from your expert opinion will be analysed using ATLAS.ti™. Text will be coded, to identify design requirements and propositions that can/will contribute to the final design of the intended curriculum. I am employing strategies to ensure high levels of trustworthiness, credibility, and transferability, such as triangulation of multiple data sources or data of e.g. different experts as and when applicable and when needed member checking were and will be done.

There will be no personal incentives or rewards for participation, but the reward will hopefully be on the level of the contribution that you will be making to curriculum design and the training of OTs from SA within the field of SI. I am committed to give due credit to all who have assisted, supported and contributed to this research project.

In participating in this research, I accept that you are granting permission for the publication of the results in the format of a thesis, publication in peer reviewed journals and/or presentation at congresses and/or relevant platforms.

Your participation is highly appreciated.

Thank you and kind regards,



Annamarie van Jaarsveld

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Co-Promotor: Dr S van Vuuren, School for Allied Health Professions,
Faculty of Health Sciences, UFS
Tel No: 051-4013319

Health Sciences Research Ethics Committee, Faculty of Health Sciences of the University of the Free State can be contacted at (051) 405 2812.

Master's degree in Occupational Therapy (Sensory Integration)

Total credits: 180

International ASI® Expert 2

Curriculum Expert 2

M.OT (SI) qualification outcomes are to:

11. Produce a specialist occupational therapist in the field of sensory integration (MOT-SI) who can influence and contribute to the field at an advanced level of *service delivery throughout the lifespan.*
12. Provide the specialist MOT-SI with an understanding of the breadth of ASI®-related and underpinning knowledge that will equip the OT-SI to deliver specialist services *tailored to the needs of clients* in this field and that will be internationally acknowledged.
13. Equip and systematically expand the specialist MOT-SI with a critical awareness of current challenges and/or new insights in the field of sensory integration *in relation to advances in neuroscience and occupational science* to address the complexities of sensory integration services in the South African context ***ranging from first world settings to third world settings whilst delivering services adhering to 'best practice guidelines'***.
14. Consolidate a sense of equity, justice and service ethics in the specialist MOT-SI that will ensure accountability and reflexivity, irrespective of the work environment.
15. Develop competencies that will allow the specialist MOT-SI to proficiently articulate (verbally and in writing) complex SI-relevant matters to a range of audiences, dependent on need.
16. Broaden the specialist MOT-SI competencies in terms of transferable skills for application in other settings, disciplines and general life. These include the abilities to:
 - a. Plan, implement and manage projects,
 - b. Work independently and as part of a team,
 - c. Influence policies in terms of change, development and implementation.
17. Foster a culture of inquiry through the use of the specialist MOT-SI's ***clinical*** reasoning skills, expanded professional expertise in the field of sensory integration by developing innovative ideas or contributing knowledge in the field of ASI®.

18. Increase the specialist MOT-SI's ability to demonstrate originality in the application of knowledge, together with a practical understanding of how established techniques of research and enquiry are utilised to create and interpret knowledge and design products **relevant for diverse settings in the South African context.**
19. Develop the specialist MOT-SI's competencies to evaluate and critique methodologies, and identify gaps in terms of research, services, and advocacy.
20. Throughout the qualification process cultivate a specialist MOT-SI with competencies that will foster and support advanced scholarship by solving complex problems in the field of sensory integration, contributing to the ethical standards of ASI® service delivery in the South African context and to emerge as a leader in the field of sensory integration in South Africa.

GENERAL INFORMATION:

- Pre-requisites:
1. B OT degree or BSc OT Degree.
 2. Successful completion of the SASIC 1-4 courses presented by SAISI or an acknowledged equivalent thereof.

Delivery mode: The M OT in Sensory Integration will be delivered via a mixed-mode of delivery. Candidates are required to attend a compulsory block contact session early in each term with monthly scheduled **electronic** sessions. Teaching and learning activities include workshops during the contact sessions, self-study, online activities (the candidate is required to interact with peers, mentors and lecturers), case studies (theoretical and practical), and a hybrid of work-integrated learning modalities. Pre-constructed cases and real clinical cases will be the primary vehicle through which students will attain the necessary knowledge, skills and attitudes. Through extensive engagement with cases and set learning experiences that will include continued reflection and feedback, students will advance and actualize specialist ASI® competencies.

Fundamental features:

Learning experiences will be integrated into a case-driven approach to learning. Students must therefore have access to cases from over the lifespan of those who have experienced sensory integration difficulties and dysfunctions. Three cases from the student's field of experience of ASI® will be identified, and the student will work with

these during the two-year qualification period. An additional two cases that diverge from the student's field of experience will also be included in the student's work during the qualification period. The case load of each student will be determined in consultation with an academic mentor, assigned to the student, to ensure a case load that is representative of the lifespan and the realities of the South African context.

2. Each student will be allocated to a primary "academic" mentor at the beginning of the programme who will journey with them during the process of obtaining the qualification. This primary mentor will support the student in decision-making processes regarding suitable cases, reflection/discussions needed during assignments, projects, etc., and will assist in the development of the specialist MOT-SI. Students will also receive clinical mentoring from an acknowledged mentor in the field of sensory integration during the two-year period.
3. A research project (Module 4) will commence once modules 1 and 2 have been successfully completed. This project will be done as part of an umbrella proposal research which could either be case study research or product design research. The research will be conducted under the supervision of a study leader.
4. Students will be co-designers of their learning, collaborating with their academic mentor on learning experiences that will optimise their competency acquisition, thereby acknowledging that each student will enter this qualification with a unique set of already obtained knowledge, skills and attitudes.
5. The delivery of the curriculum will start with an introductory day where students will be prepared for the qualification and for taking ownership of their own master's journey. Meetings with academic mentors will take place and planning regarding each student's study pathway will be done.

Assessment of four modules: Modules 1, 2 and 3 include activities of continuous formative assessment by means of informal, formal and structural assessment activities, with no formal exams. (The argument here is that students have to demonstrate consistent attainment of a broad range of competencies, and no one formative exam would suffice in deciding whether or not the student had been successful).

Module 4 consists of formative assessments and a final summative assessment of the research report. All four modules must be successfully completed for the qualification to be awarded.

Progression: Modules 1 and 2 will serve as foundations for Modules 3 and 4. Module 1 will build on knowledge gained at undergraduate level as well as knowledge gained during the SAISI training courses. Content of the module will contribute to knowledge of core theoretical foundations which will support and inform the application thereof in teaching and learning activities, not only of the specific module but also in the module 2 running co-currently. Competencies gained in module 1 will also provide a theoretical foundation for the two modules following, once modules 1 and 2 have been successfully completed. Module 2 is focused on attaining competencies that will contribute to comprehensive specialist sensory integration service delivery in the field of sensory integration. It will also provide the student with a solid foundation for dealing with the realities of the South African context presented in Module 3. The student will have in-depth knowledge of the field that will serve as a solid foundation for making decisions on research topics for module 4.

Modules 3 and 4 will be completed once Modules 1 and 2 have been successfully completed. Module 3 will equip the student with competencies to plan and deliver sensory integration services for contexts varying from Western to Afrocentric, using knowledge, skills and attitudes attained in modules 1 and 2. The research module (module 4) will equip the student not only with competencies related to research and the communication thereof but additionally will foster an embracing attitude towards the importance of research in the field.

Extended progression will be possible but in line with the institution's policy.

Recognition of Prior Learning (RPL): The University of the Free State recognises prior learning and students who have prior learning experiences and are convinced that they have already gained the competencies indicated in the curriculum and will be able to provide proof of this can apply and submit themselves to the prescribed RPL process of the University of the Free State.

MODULES OF CURRICULUM M. OT (SI) VERSION 3

Module 1: Theoretical foundations	Themes: <ul style="list-style-type: none"> • Applied neuro-science • Advanced ASI® theory • ASI® and occupation • ASI® research
Credits: 30	
Module outcome: The specialist MOT-SI will be able to apply theoretical foundational knowledge of applied neuro-science, occupation and participation, and ASI® theory and research in the process of planning and delivering specialised ASI® services.	
Specific outcomes: After the successful completion of this module, the specialist MOT-SI will be able to: <ol style="list-style-type: none"> 5. Convey fundamental knowledge to peers on neuro-science as applied to sensory integration, ASI® theory and research, and ASI® and occupation. 6. Apply fundamental knowledge in a clinical reasoning process during management of cases. 7. Defend reasoning and decision making on sensory integration difficulties and dysfunctions based on fundamental knowledge of applied neuro-science, ASI® theory and research, and sensory integration as a frame of reference. 8. Evaluate and critique assessment and intervention methods related to or derived from Jean Ayres' theory of sensory integration based on knowledge of the scope and limitations of the field. 	
Teaching and learning activities with relevant assessment	
<ul style="list-style-type: none"> • Self-study (Formative) 	<ul style="list-style-type: none"> • Reading related to fundamental theoretical underpinnings and relevant to each of the themes will be required. Topics requiring comprehensive reviews will be provided. Assessment will be done through the completion of online questionnaires.
<ul style="list-style-type: none"> • Lectures (Formative) 	<ul style="list-style-type: none"> • Formal lectures on specific advanced theoretical themes will be delivered. Assessment of the ability to understand and apply theoretical knowledge on hypothetical cases will be done on-line and feedback will be provided.
<ul style="list-style-type: none"> • Student-led discussions (Formative) 	<ul style="list-style-type: none"> • Face-to-face and on-line student-led discussion groups where preparation to argue on theoretical constructs related to one of cases will be required. Demonstration of fundamental knowledge and the application thereof related to a case will be assessed. • Preparing a set of theoretical topics for discussion in face-to-face and on-line discussion groups. Knowledge,

	participation and critical and constructive contribution to discussions will be peer-assessed and feedback will be provided by lecturers.
• Case presentations (Formative)	• Preparing cases for discussion in groups. The focus of group discussions will be on ASI® assessment findings and intervention planning related to the case's occupational engagement. Arguing and defending of findings, intervention planning and impact on occupational engagement in the group will be the focus. Depth of knowledge on ASI® assessment and intervention, impact on occupational engagement, ethical decision making and ability to clinically reason will be assessed and feedback will be provided by lecturers.
• Presentations (Formative)	<ul style="list-style-type: none"> • Presenting one of the cases in a seminar where foundational theoretical knowledge is given as evidence to persuade the audience of the need for ASI® services. Students' ability to convey professional and specialist knowledge and make independent and appropriate decisions will be assessed and feedback provided. • Preparing and presenting assessment and intervention methods related to or derived from Ayres' work and lead an evaluation and critique session in peer group. Students' demonstration of knowledge on the scope and limitations of ASI®, related/derived sensory measures and methods and their ability to argue on different modalities will be assessed and discussion-based feedback will be provided.
Final assessment of module:	All assessment activities will contribute to final module mark. A final mark of 50% is required to pass.

Module 2: Lifespan assessment and intervention	Themes: <ul style="list-style-type: none"> • Babies to elderly <ol style="list-style-type: none"> 1. Client and occupational profiles • Diverse populations <ol style="list-style-type: none"> 1. Pathologies 2. Afrocentric versus Western approaches to ASI • Case management
Credits: 60	
Module outcomes:	

The specialist MOT-SI will be able to deliver and/or coordinate comprehensive specialist sensory integration services to clients from over the lifespan in a variety of settings and always to the highest ethical standards.

Specific outcomes:

After the successful completion of this module the specialist MOT-SI will be able to:

1. Make independent decisions regarding relevant ASI® assessment and intervention strategies for clients throughout the lifespan and in various settings and environments.
2. Demonstrate advanced ASI® assessment and interpretation skills, both verbal and documented, during case management, always considering the person, occupation and environment.
3. Provide skill and attitudinal evidence during case management of a deep understanding of the challenges and struggles that individuals and their families experience when confronted with sensory integration difficulties/dysfunctions.
4. Provide evidence of mentoring experiences, by an acknowledged mentor in the field of ASI®.
5. Communicate findings of cases, verbally and in writing, to professionals and parents/caregivers.
6. Reason and make sound judgments on the different sensory integration dysfunctions as identified through research during case management, case presentations and discussions.
7. Demonstrate advanced ASI® assessment and intervention planning skills of cases, using a data-driven decision-making process and thereby adhering to best practice.
8. Demonstrate skills in applying ASI® intervention that adhere to ASI® Fidelity Measure during videotaped and simulated intervention sessions.
9. Plan and deliver sensory integration services to cases that are appropriate, equitable and just in terms of person and environment, with an acute receptiveness towards those who do not have access to OT-SI services in simulated and real-world settings.
10. Demonstrate knowledge on the affordances of sensory integration equipment and its effective application during workshops, simulated and videotaped intervention sessions.
11. Possess the ability to self-critique own ASI® assessment and intervention with the necessary insight during reflection on videotaped sessions and during workshops.
12. Proven ability to make autonomous ethical decisions in the delivering of specialist OT-SI services for cases involved in teaching and learning process.
13. Provide documented evidence of activities contributing to life-long scholarship in the field of ASI®.
14. Demonstrate the ability to take on the role of advocacy for sensory integration services by providing evidence thereof.
15. Rate peer ASI® intervention sessions successfully with the ASI®-Fidelity Measure under the guidance of a supervisor.
16. Provide evidence and reflect on the importance of self-direction and life-long scholarship in ASI®.
17. Provide evidence of a self-directed activity of conscious engagement in national and/or international activities with the aim of promoting ASI®.

Teaching and learning activities with relevant assessment	
Reflective journaling (Formative)	Reflection on work-based experiences will be done to develop and refine own conceptual understanding of ASI® service delivery. Reflections will be part of formative assessment.
Workshops (Formative)	Practically engaging in advanced ASI® assessment and intervention with demonstration of advanced practical skills in ASI® assessment and intervention. Video recordings will be made during workshops and reflected on as part of formative assessment.
Case studies (Formative)	<ul style="list-style-type: none"> Arguing on decisions taken in the therapeutic process of cases regarding ASI® assessment and intervention and the impact thereof on a person, occupation and environment during group case presentations. Discussion and reflections will serve as formative assessment. Preparing, documenting and presenting of motivated recommendations regarding appropriate, equitable and just ASI® services for diverse cases and in different settings where the presentation will be peer assessed and the documentation formatively assessed. Presentation of a case that provides proof of specialist MOT-SI's understanding of challenges experienced by individual and family due to sensory integration difficulties/dysfunctions, which will be assessed by peers and lecturers, with formative feedback provided after presentations.
On-line discussion board (Formative)	Discussion of solutions for complex cases on discussion board according to guidelines. Contribution to discussion and possible solutions will be discussed and feedback provided as part of formative assessment.
Case management workshop and presentations (Formative)	Develop and design different components of data- driven decision-making process and present case studies verbally and in writing demonstrating ability to use data-driven decision-making process as part of best-practice during case management. Evidence of data-driven decision-making process will be assessed and formative feedback provided.
Simulation (Formative)	<ul style="list-style-type: none"> Plan and execute intervention session in simulated environments reflecting competencies needed to deliver OT-SI services in Western and rural/ community settings. Deliver ASI® intervention in a clinical skills unit with standardized "patients".
Video presentations (Formative)	<ul style="list-style-type: none"> Presentation of video recordings of own cases regarding feedback sessions with parents/educators/professionals will be assessed and formative feedback provided. Presentation of video recordings of intervention sessions, after which student will reflect on clinical reasoning during sessions

	<p>for assessment purposes and formative feedback will be provided.</p> <ul style="list-style-type: none"> • Submission of ASI®-Fidelity Measure video recordings of intervention sessions for successful rating and feedback.
Expert video recording discussions (Formative)	Group discussions on observations and insights after watching expert videos on ASI®. Participation and contribution to group discussion will be assessed.
Case discussions (Formative)	<ul style="list-style-type: none"> • Presentation and reasoning on case management on an advanced level, where decisions made, level of reasoning, assessments done, findings made and planning of intervention will be assessed and feedback provided. • Demonstration of the ability to argue on an advanced level on different sensory integration dysfunctions and discuss influence of sensory integration difficulties/dysfunctions on person, environment and occupation of cases in diverse settings. Argumentation and applied knowledge will be assessed and feedback provided.
On-line discussion board	Analysis and discussion of affordances and use of equipment in diverse settings. Contributions to discussion board will be formatively assessed.
Project (Formative)	Submission of a project where evidence of the student's competency in terms of advocacy for ASI® is demonstrated. Competency in advocacy for ASI® will be assessed formatively.
Rating (Formative)	Rating of peer intervention sessions under supervision according to ASI®-Fidelity Measure. In-depth discussion with trained ASI®-FM trained rater will form part of formative assessment.
Portfolio (Formative)	<ul style="list-style-type: none"> • Evidence in portfolio on activities supportive of self-direction and scholarship (barriers and enablers). Evidence of activities of self-direction and scholarship will be assessed and formative feedback will be provided by academic mentor. • Evidence in portfolio of self-initiated efforts to contribute nationally and internationally in the field of ASI® needs to be documented and submitted for assessment. Formative feedback will be provided by academic mentor.
Mentoring (Formative)	Submission of mentoring reports and reflections that will be assessed in terms of insight and depth, together with formative feedback from mentors.
Final assessment of module:	All assessment activities will contribute to a final module mark. A final mark of 50% is required to pass.

<p>Module 3: ASI® and the South African Context</p>	<p>Themes:</p> <ul style="list-style-type: none"> • Philosophical grounding for Afrocentric and Western approaches • ASI® in different contexts (Private Practice, Hospitals, Schools, Primary Health Care, Communities) • ASI® translated to group settings • Transfer of ASI® knowledge in diverse settings
<p>Credits: 30</p>	
<p>Module outcomes: The specialist MOT-SI will be able to ground knowledge of ASI® services in an Afrocentric as well as Western philosophical approach when reasoning on and planning services for different SA contexts. The specialist MOT-SI will be able to deliver services to individuals and groups in different environments while always adhering to the highest ethical standards and best practice principles.</p>	
<p>Specific outcomes: After the successful completion of this module the specialist MOT-SI will be able to:</p> <ol style="list-style-type: none"> 1. Produce written proof of knowledge and understanding of an Afrocentric as well as a Western philosophical approach in the use of ASI®. 2. Adapt ASI® service delivery aligned with an Afro-western approach when indicated. 3. Demonstrate verbal and written knowledge on ASI® and diverse populations and contexts during case study presentations. 4. Apply primary health care principles in the delivering of ASI® services. 5. Design and produce innovative service plans for specific populations and contexts and present the service plans during a formal presentation. 6. Illustrate knowledge and understanding on primary health care and community-based practice and the realities of delivery or non-delivery of OT-SI services on these levels in the verbal presentation of a written assignment. 7. Contribute to policy changes and/or implementation of services that would benefit a population struggling with sensory integration difficulties or dysfunctions. 8. Adapt ASI® assessment and intervention in predetermined and diverse settings whilst staying as true as possible to ASI® Fidelity. 9. Design or adapt sensory integration equipment creatively that will be relevant for under-resourced environments. 10. Demonstrate ability to transfer ASI® knowledge on different platforms and/or scenarios. 11. Demonstrate ability to emerge as mentor in the field of ASI®, mentoring a junior colleague and reflecting thereon in writing and submitting written reflections of the mentee. 	

Teaching and learning activities with relevant assessment	
Workshop and group work (Formative)	Practical engagement in problem solving on real-world issues in the SA context and ASI® service delivery will be addressed in workshop format during which a real-world problem will have to be solved during group work.
On-line discussion board (Formative)	Use of discussion board to argue on relevance of Western and Afrocentric philosophical orientations and how these influence sensory integration services and participation and contribute to understanding will be formatively assessed.
On-line assignments (Formative)	Applying theoretical knowledge on Western and Afrocentric philosophical orientations as they relate to the delivery of OT-SI services to one of the cases, which will formatively be assessed.
Case presentation (Formative)	<ul style="list-style-type: none"> • Demonstrate knowledge of health disparities in SA and the impact thereof on sensory integration services managing real-life case examples. • Provide evidence of how primary health care principles were applied to deliver ASI® services in a community/rural setting.
Assignment and presentation (Formative)	Predetermined assignment on primary health care and community practice addressing the realities of OT-SI service delivery. Written assignment and verbal presentation thereof will be formatively assessed.
Documentation and case presentation (Formative)	Managing a diverse case in terms of assessment, design and implementation of an innovative service plan adhering to highest ethical principles. Written documentation and verbal presentation of identified sections of case management will be formatively assessed.
Presentations (Formative)	Presentation of a self-initiated contribution to policy or service delivery changes related to sensory integration services. A presentation of the plan will be formatively assessed.
Product design (Formative)	Development or adaptation of a product/plan to contribute/enable service delivery in an under-resourced environment. The product/plan will be formatively peer assessed.
Video presentation (Formative)	Presentation of evidence by means of video recording, which will be formatively assessed, of ability to transfer ASI® knowledge to an Afro-western approach as applicable for different platforms and audiences.
Mentoring (Formative)	Mentoring sessions and experiences as mentor, with identification of challenges and strengths where written reflections of experience and discussions with academic mentor will serve as formative assessment.

Module 4: Research	Themes: <ul style="list-style-type: none"> • Research theory supporting project • Project management • Innovation/professional expertise projects
Credits: 60	
Module outcomes: The specialist MOT-SI will be competent in appraising relevant literature that will contribute to knowledge on seminal and current research in the field and successfully complete an aspect of a research project, as part of an umbrella research proposal, that will contribute to the knowledge base of ASI®.	
Specific outcomes: After the successful completion of this module the specialist MOT-SI will be able to: <ol style="list-style-type: none"> 9. Discuss and argue on seminal and current research in the field of ASI®. 10. Identify current gaps in ASI research that can be addressed. 11. Demonstrate knowledge of research project management. 12. Demonstrate an understanding of the development of a research question, aim and objectives in the field of ASI®. 13. Demonstrate competence in the application of knowledge of research methodologies in answering an aspect of a research question. 14. Execute and complete an aspect of research project, under the guidance of a supervisor. 15. Communicate/disseminate research findings in a publishable format. 16. Exhibit an attitude of embracing the importance of research in the field of ASI®. 	
Teaching and learning activities with relevant assessment	
Group discussions (Formative)	<ul style="list-style-type: none"> • Discuss and argue on relevant and seminal research during group discussions where level of knowledge and depth of argumentation will be formatively assessed. • Discuss research gaps in an effort to understand the research questions of the umbrella research projects (of which students will be doing a part) during group discussions with study leaders which will serve as formative assessment.
Formal lectures (Formative)	Lectures on the research process as applied to research projects will be presented and the development of a mock research proposal, relevant for the section of the research they will be conducting, will serve not only as formative assessment but also provide a provisional framework for a publishable article.
Information management (Formative)	Literature needed for successful completion of this module will include academic books and research articles which will necessitate information management. Independent searches on specified topics will also be required and managed. Formative feedback will be provided on success of information management.

Assignment (Formative)	Assignment on project management using own research as 'the project' that will be formatively assessed.
Research (Formative)	Executing research as applicable for the project. Research process will be formatively assessed.
Presentation	Present a talk on the meaning of research on becoming a specialist MOT-SI's where the presentation will be formatively assessed.
Scientific writing (Summative)	Writing up of research project in a publishable article for possible submission in a peer-reviewed journal. Summative assessment will apply for the article.
Final assessment of module:	All assessment activities will contribute to 50% of the module mark, with the summative assessment of the article contributing the other 50%.