

The value of small-scale student projects in undergraduate research training

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This article reports on the undertaking of small-scale projects for final-year Occupational Therapy (OT) students training at the University of the Free State. An Action Learning Action Research (ALAR) approach was used to investigate the impact of such projects in a clinical setting. A tree analogy is used to describe the student projects, providing the body of the investigation as a whole, and sharing the experience gained in determining the constituents of the “fertile soil” and conditions for “optimum growth”. The impact of ALAR on practical experience is explained as a first step towards establishing a research culture among undergraduate students in OT as well as in similar training contexts.

Die waarde van kleinskaalse studentprojekte in voorgraadse navorsingsopleiding

Hierdie artikel lewer verslag oor studentprojekte van beperkte omvang wat in die finale jaar van Arbeidsterapie-opleiding aan die Universiteit van die Vrystaat onderneem word. 'n Aksieleer en -navorsingsbenadering is gevolg om die impak van hierdie projekte in 'n kliniese omgewing te ondersoek. 'n Boom-analogie van die volledige projek word gebruik om die studentprojekte te beskryf. Hierdie beeld orden die ondervindings wat tot die samestelling van “vrugbare grond” en die toestande vir “optimale groei” bygedra het. Die impak van aksienavorsing op praktiese ondervinding word beskou as 'n eerste stap in die daarstelling van 'n navorsingskultuur onder voorgraadse studente in Arbeidsterapie en soortgelyke opleidingsomgewings.

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The researcher (first author) embarked on an action research journey in an attempt to consolidate her roles as part-time lecturer at the University of the Free State (UFS) in Bloemfontein and as consultant occupational therapist in a residential care facility for elderly persons.¹ This facility provides an opportunity for occupational therapy students to practise their future roles, although a qualified therapist is not stationed at the premises but only available upon request. In November 2004, the facility and the Department of Occupational Therapy at the UFS agreed on the involvement of final-year occupational therapy students in the initiation of an activity programme in *Ons Tuiste*. This facility houses approximately 20 individuals from various cultural backgrounds. At the time of the study, the service was run by two fourth-year occupational therapy students on rotation for a period of five to six weeks. The researcher (as consultant) acted as their clinical supervisor. The endeavour to improve both the quality of life of the residents in the dementia care unit and the students' learning experience prompted a closer investigation into how research could inform practice.

Research training is a learning outcome for undergraduate occupational therapy training (WFOT 2002). Accordingly, students at the UFS are exposed to literature searches, referencing techniques and opportunities for scientific writing from the inception of their studies. By the end of their fourth year, occupational therapy students would have been exposed to training in research methodology, statistical analysis and engagement in a full-scale research project involving processes of protocol submission, ethical clearance, data generation and interpretation as well as the production of a research report. The academic aspect of systematically and constructively aligning research training is supported by skills acquired in the clinical setting.

1 The contribution of Daleen Struwig, medical writer, Faculty of Health Sciences, University of the Free State, is acknowledged for technical and editorial preparation of the manuscript for publication. A special word of appreciation goes to the staff and residents at the care facility, as well as all the undergraduate Occupational Therapy students from the UFS involved in the study.

At the UFS Department of Occupational Therapy, assessment takes place after each phase of fieldwork education in the third and fourth years of study. For this purpose, the supervising clinician may give the student either a case study or a mini-research project. The latter option provided a unique opportunity to initiate and evaluate the design, structure and development of the successive mini-projects at *Ons Tuiste*. Subsequently, the deliberate use of a “plan, act, describe, review” cycle stimulated a continuous evaluation of the effects and effectiveness of change in practice. When evaluating the processes and actions followed to develop the service, it was decided to incorporate recognised action research procedures instead of merely employing thought and action, as advocated by Tripp (2003). Consequently, the practical use of action research was encouraged in the clinical context, while simultaneously generating evidence for practice. As the service expanded and research progressed, an evolving learning process was created for both the researcher (as an academic/clinical supervisor) and the students.

Zuber-Skerritt (2005a: 50) defines action learning as the opportunity to “learn from each other, from action and concrete experience, as well as taking action as a result of this learning”. However, others interpret action research differently. The researcher found it to be a philosophy, methodology and theory of learning, as advocated by Zuber-Skerritt (1995a). The outcome of this research approach is the dual pursuit of action and research (Dick 2002). Action research, as interpreted by Henning (2004: 48), can thus be described as “a long-term investment that is both intervention and research”.

This article aims in the first instance to clarify the aforementioned learning process, described metaphorically as a tree rooted in nurturing soil and, secondly, to share the experience gained in determining the consistency of the fertile soil needed for optimum growth. This process clarified the goal of promoting a culture of research in undergraduate occupational therapy training. The Action Learning Action Research (ALAR) approach is therefore central to this investigation.

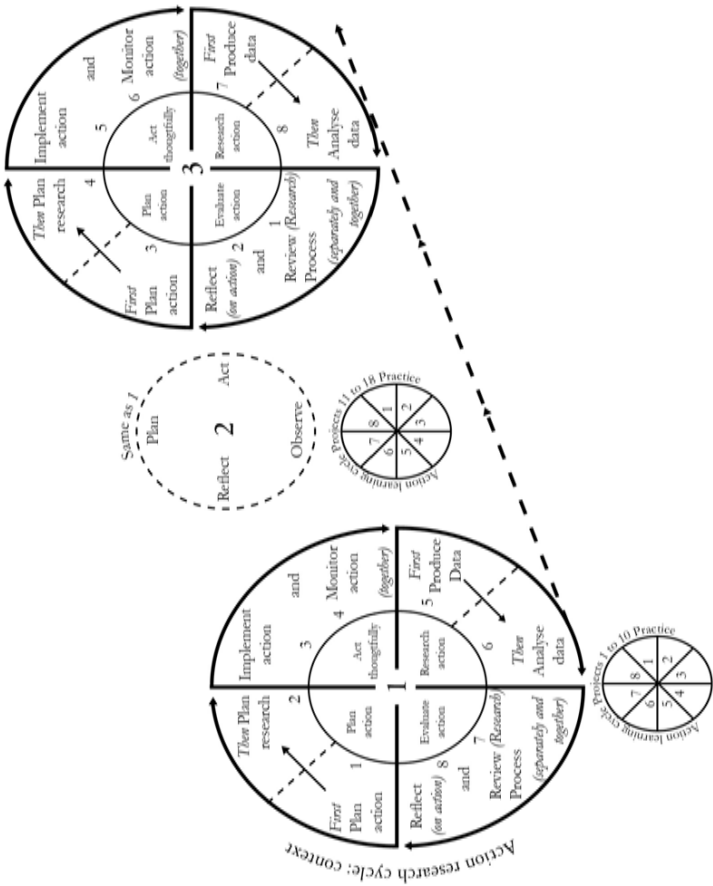
1. Research design and methodology

This investigation focuses, in particular, on uncovering the clinical and academic factors that contribute to the development of mini-projects. The researcher sought to understand the evolving process that simultaneously deals with the expansion of the occupational therapy service and the successful training of occupational therapy students. In this study the interdependence between theory and practice, research and development, thought and action is also reflected by the inter-reliant nature of the relationship between action learning and action research (Zuber-Skerritt 2001).

With this approach, the mini-projects as well as the students involved in executing the projects were directed flexibly and systematically in order to promote conceptualised learning from experience. This learning is embedded in a process in which each cycle, after initial problem identification, feeds into action planning, implementation, evaluation and reflection, as illustrated in Figure 1. This figure is an adaptation of two Zuber-Skerritt (2002) models as applied in this study. It illustrates the action research cycles by means of a series of circles, and the figure eight model, a process in which both context and practice are addressed in the design of an action plan. This article focuses on the first two cycles shown in Figure 1. Each cycle is characterised by an initial stage of exploring the context of the identified problem prior to describing the associated practice areas during an action research process.

Data generation predominantly relied on the students' execution of individual projects. The model in Figure 1 indicates how the ALAR process encouraged reflexivity, problem-solving, as well as active and experiential learning, thus promoting an emancipatory engineering of knowledge (Roberts 2002). This practical approach encouraged students to continuously participate in and reflect on their involvement in the mini-projects.

Figure 1: Engagement in the ALAR process during the first three cycles of inquiry



The research group consisted of 14 fourth-year students who participated in the initial two action research cycles. The first ten projects were conducted over a period of 14 months and the subsequent eight projects were completed in the ensuing nine months. The students consented to their contributions being included in the study, and ethical approval for the study was obtained from the UFS.

As the ALAR approach promotes an emancipatory engineering of knowledge, Zuber-Skerritt (1992) stresses that the focus is therefore on the learning milieu. The mini-projects that were conducted as part of clinical practice provided a unique learning milieu for this study. Different techniques contributed towards creating supportive circumstances for the teaching-learning environment. These techniques focused primarily on the evaluation and reflection components of the ALAR process. A questionnaire was used as a structured feedback form for students to reflect on their mini-projects. It guided the students to reflect on their overall experience: what they enjoyed most and least; what they found difficult, and whether they would do anything differently should they have another opportunity.

In order to fully utilise the research situation, a data-driven approach was followed, as advocated by Dick (2002), whereby the results of one mini-project fed into the development of the succeeding project. Rigour and relevance were promoted by incorporating a critical analysis of each project. Efforts to concentrate on personal self-reflection encouraged the researcher to be flexible and responsive in taking a fresh look at each mini-project during the execution and after the completion of the 18 projects. First, the strengths and weaknesses observed during each student's project presentation were documented to communicate the findings of each specific research project. Secondly, these evaluations were filed with the completed project documentation for future students who would be conducting successive projects. Thirdly, the researcher recorded both the project development and the maturation of her ability to facilitate student participation in the mini-projects in a reflective journal. All data were then considered when compiling the assignment for the next mini-project.

Although data collection was predominantly qualitative, the study was also quantitatively enhanced by various surveys (for example, questionnaires) to further the triangulation of information. Questionnaires were used as an introduction to sessions where the nominal group technique was used. Bowling (1997) refers to this technique as an “expert panel” of individuals who contribute towards consensus on identified issues. Questions assisted in focusing the participants on their personal contribution as part of a group that engaged in successive projects for producing researched outputs. The nominal group technique was used at the end of the first and the second research cycles. These research cycles lasted approximately 24 months, which allowed for the time required for the progression of the investigation. The nominal group technique was therefore applied to affirm what the researcher uncovered as part of the action research process, for instance what she learned from her reflexive experiences. In the third cycle the researcher engaged in the evaluation process for reviewing and reflecting on the overall process, rather than on organising and planning the next successive mini-projects.

A comprehensive data analysis contributed to an integrated view of all findings. The discussion aims to establish meaning by themes and patterns that connect, rather than merely categorise and code data segments (Henning 2005). The findings and discussion sections are combined to capture the evolving process that emerged during the project development – a process that can be appropriately explained by means of the tree analogy.

2. Findings

2.1 Project evolvement – the tree analogy

This section first elucidates the thriving project design associated with the development of the successive mini-projects. Figure 2 illustrates the tree analogy used to explain how the process evolved. Secondly, fertile conditions for tree growth (linked to fieldwork education experiences) are viewed as horizontal soil layers. The findings relating to the design of the mini-project-projects are therefore

sustained by investigating the necessary supportive structure. In botany, there are distinctive layers of soil (Starr & Taggart 1989). This terminology is used as a guide to portray the characteristics of the supporting foundation, in other words, the constituents of the fertile soil in this analogy.

2.2 A tree as representation of a thriving project design

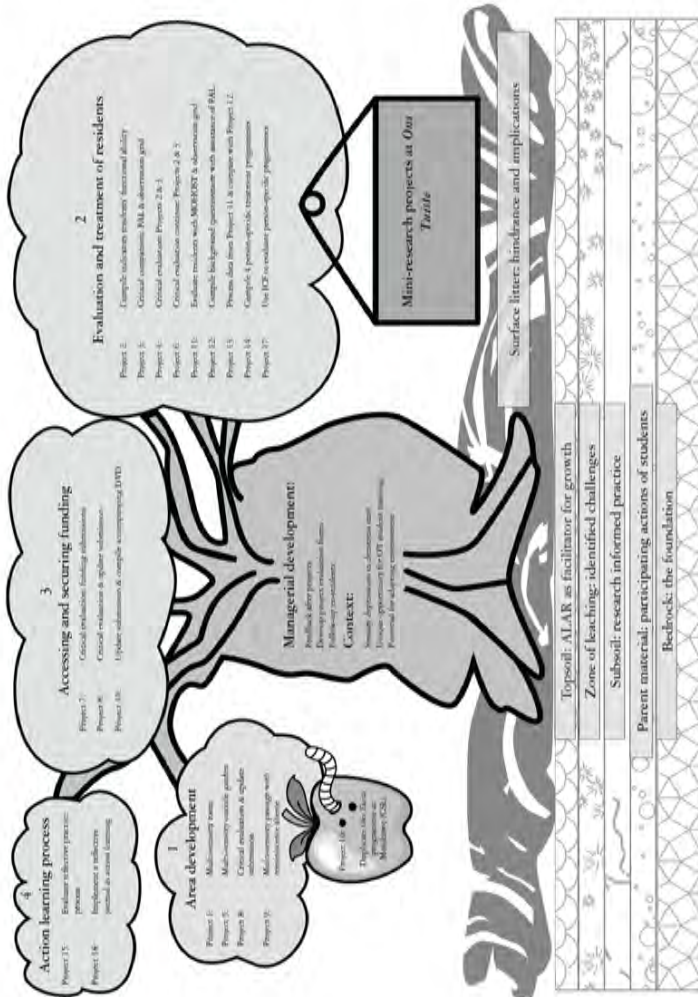
The nature of the mini-projects and the research process are regarded as the key elements of the thriving project design in the tree analogy. Altogether 18 mini-projects were implemented by 14 students. Table 1 summarises the themes for these projects. Four of these students also had a second opportunity to engage in the process during year-end clinical evaluations/assessments.

Figure 2 schematises the tree analogy used to summarise the development of the project over the preceding two-and-a-half years. As indicated, there were five main areas in which the mini-projects relating to this specific investigation thrived: multisensory recreational area development (Projects 1, 5, 8 and 9); evaluation and treatment of residents (Projects 2, 3, 4, 6, 11, 12, 13, 14 and 17); accessing and securing funding for projects (Projects 7, 8 and 10); promotion of the action learning process for students (Projects 15 and 18), and spin-off (similar project piloted in another care facility) (Project 16).

Table I: Themes of mini-project assignments at the care facility

Chronological order	Project title
1	Design of a multisensory room (involving the community).
2	Compilation of indicators of selected residents' current functional abilities.
3	Critical comparison of standardised assessment with compiled list of indicators.
4	Critical evaluation of Projects 2 and 3 – adapt and apply form.
5	Design of a multisensory outside area in designated space.
6	Critical evaluation of Projects 2 and 3 – adapt and apply form.
7	Critical evaluation of two previous funding submissions and suggestions for adaptations.
8	Critical evaluation of updated submission and addition of an outside area.
9	Design of multisensory passage with reminiscence theme (involving local artists).
10	Critical evaluation of documentation for sponsors and compilation of a DVD to accompany it.
11	Selection of 10 residents to evaluate according to MOHOST and observation grid.
12	Evaluation of selected residents with PAL and compilation of background questionnaire.
13	Processing of data generated by Project 11 and comparison with findings from Project 12.
14	Compilation of four person-specific treatment programmes.
15	Evaluation of reflective practice process encouraged as to increase research.
16	Investigation of potential of duplication programme at newly targeted care facility as part of CSL due to the success at the current facility.
17	Application of ICF to evaluate effectiveness of person-specific programmes.
18	Investigation of action learning by implementing a reflective journal.

Figure 2: Project evolution – the tree analogy



2.2.1 Area development (Figure 2, branch 1)

Project 1 (designing a multisensory room) was initiated to explore the viability of establishing a unique service at the facility prior to student placements at *Ons Tuiste*. It was anticipated that with the occupational therapy programme functioning predominantly on input from students, certain aspects of the programme would terminate temporarily during periods of lectures or holidays. The idea was to take advantage of occupational therapy expertise provided by the consultant and students when they were available on site, and to establish resources that could alternatively be accessed by family members, staff and volunteers for the benefit of the residents. Project 1 was followed by the designing of a multisensory garden (Project 5) as well as groundwork (Projects 8 and 9) leading to the establishment of multisensory areas in early 2006.

2.2.2 Evaluation and treatment of residents (Figure 2, branch 2)

A unique opportunity for monitoring outcomes during the development of the occupational therapy service presented itself as there had been no occupational therapy programme in the unit for the preceding 12 years. A separate branch of projects focused on this aspect of service development. Project 2 resulted in compiling a baseline profile of the residents' current activity performance level prior to occupational therapy input. This aspect was refined and developed with an observation grid as the outcome of Projects 3, 4 and 6. Project 11 then continued this process by implementing both the grid and a formal assessment tool (the Model of Human Occupation Screening Tool, MOHOST) (Parkinson *et al* 2006) as part of the baseline profile for ten selected (convenience sample) residents. Data were expanded by observing the same ten residents while administering an additional formal assessment tool (the Pool Activity Level, PAL) (Pool 2008), in order to compile a comprehensive questionnaire for background information on residents during Project 12. Project 13 evaluated and compared information generated by both Projects 11 and 12. Useful data on the most effective tools for evaluating future input were generated at this stage.

Until this stage, a lack of staff delayed the actual implementation of a treatment programme in the dementia unit. Establishing person-specific treatment programmes for residents progressed when all the data generated up to Project 13 were utilised in a formal group research project conducted by six final-year OT students. The facility and the guardians of 13 residents (convenience sample) gave informed consent for the exposure of these residents to four different treatment situations in order to determine which activities each individual preferred. These situations involved sensory stimulation during hand-washing and eating activities, as well as exposure to a multisensory room and garden. Mini-projects then continued by establishing person-specific treatment programmes for four residents (convenience sample) (Project 14). In these programmes, activities were selected for which residents indicated a preference during the group research project. Three more programmes were developed for an additional three residents before identifying an outcome measure (the International Classification of Function, ICF)² to evaluate the effectiveness of these programmes (Project 17).

2.2.3 Accessing and securing funding (Figure 2, branch 3)

Continuity in the preparation process for recording the impact of an OT programme on the functioning of residents was interrupted by the quest to secure funds (Projects 7, 8 and 10). In order to expand the multisensory areas, proposals for funding were submitted, while evaluating why previous submissions were unsuccessful and refining submissions.

2.2.4 Action learning process (Figure 2, branch 4)

Contrary to the previous projects (which focused on developing the service), Projects 15 and 18 focus on student development, and specifically reflexivity in practice.

2.2.5 Bearing fruits: spin-off from research process (Figure 2, fruit)

Project 16 as such was a spin-off from the evolving project development process. The duplication of the process followed at the facility

2 <<http://www.who.int.classification/icf>>

blossomed into an investigation in another area, where the viability of community service learning projects was explored.

3. Reflection on the research process

The processes that led to the evolution of the projects are reflected in Tripp's (2003) interpretation of the action research cycle, namely following the "plan, act, describe, review" sequence. It was necessary to first consider the ideas involved in setting up a new student-run community service (in other words, plan action), before contemplating how research could contribute to this process (plan research). During the first cycle of the research, projects 1 to 10 were executed prior to the first nominal group process. All the data generated by the ten mini-projects, the subsequent nominal group, surveys and structured reflections were used to review the cycle and reflect on the researcher's actions at the time. This allowed planning actions and research for the second action research cycle. The same process was followed during the second cycle (cf Figure 1).

When considering her thoughtful actions as suggested by Tripp (2003), the researcher had to monitor the development of the mini-projects by evaluating the outcome and determining the value of each project. A crucial aspect in this instance was to consider whether successive students could apply the data in that format or whether it was necessary to consider these data from a fresh perspective for a more appropriate focus. In Project 13, for example, the findings of Project 11 were critically evaluated (data generated by the observation grids and MOHOST) and compared to data generated by the PAL (Project 12).

In addition, the researcher's approach had to be practical, and priorities, as the successful progression of the mini-projects, had to be weighed up against the pressing demands of the service area. It was therefore natural that the action research process flowed into a reflective practice cycle at times, for instance pertinent issues for practice were considered and implemented alongside mini-projects. This may be best explained by the development of three additional person-specific programmes between Projects 14 and 16. These additional programmes were compiled from the previous results available. The data

used resulted from findings from previous mini-projects, and activity programmes were developed without involving the students in actual mini-projects for those three identified residents.

As indicated, the natural progression for development of this new OT service is clearly visible in the first four areas (branches) of Figure 2. These areas focused on multisensory area development, investigating the target population and considering funding issues. An obvious deviation from this flow occurred in Projects 15 and 18. Guidelines provided by the occupational therapy department assisted the students with their focus and in adapting an orderly work procedure when executing the mini-research project assignment (these guidelines elucidate the steps to be followed in a typical research project). In addition, the clinical guidelines for the specific module specified the instructions for the presentation (poster format), time duration and practical demonstration contents. However, an engagement in the procedures stipulated for executing projects did not appear to encourage the students' personal growth during action learning. Consequently, two mini-projects (Projects 15 and 18) specifically focused on the role of reflection during the execution of the assignment. The students were thus compelled to pay attention during fieldwork education to the action learning component inherent to new learning situations.

During the course of the overall study, certain conditions for successful growth towards the ideal of promoting a research culture could be identified. In the tree analogy, this can be regarded as the fertile soil for optimum growth.

3.1 Constituents of the fertile soil for prolific project development

This section discusses the structure that contributed to benign conditions for growth and development (cf Figure 2). A bottom-up approach is followed; the foundation (bedrock) of the projects is presented first, followed by a discussion of the next four layers. The section concludes by identifying potential obstacles, but also those factors which would enrich the process (such as surface litter), and

discussing how these could contribute to the successful structuring of future student projects.

3.2 Bedrock: the foundation

Orientation towards the structural focus for designing the mini-projects originated from the set format of guidelines provided to fourth-year OT students. Two principal actions dominated the researcher's conduct while developing the structural format for the mini-projects: adapting the prescribed structure of the written format for the mini-project assignment, and incorporating a critical analysis of each project after presentation for marks.

First drafts of the assignments focused on background information (explaining the rationale for its request), stipulating the task(s) and the demonstration components involved, as well as listing potential resources. In some cases, specific suggestions for consideration were included. In time it also became necessary to add the aim of the action research project and a detailed account of the successive mini-project developments to date, for a more comprehensive orientation.

Towards the end of the first action research cycle a more practical approach was used which included two procedures. This approach encouraged a written format for the assignments to assist in the clarity, comprehensiveness and specificity with which the successive mini-projects should be conducted. First, the researcher formulated the next assignment directly following the presentation of the current student project. Then, the current student and internal assessor (present at the formal communication of the findings and representing the UFS during fieldwork education evaluations) received copies and were asked for comments. This ensured that the focus of the new assignment was clear (which is very important from the student's perspective) and that the execution of the project included a research component (a prerequisite that the internal assessor, as an OT academic, valued).

The eighteen projects thus generated might be regarded as evidence of the fruitfulness of the ALAR approach. In addition, the two cycles during which the structure and design for the mini-projects evolved

also provided an opportunity to try the established process. The students' experience of the process could subsequently be evaluated.

3.3 Parent material: actions of students as participants

Within the ALAR approach, the researcher needed to understand whether she had developed system-orientated, holistic solutions (Zuber-Skerritt 2001) for the practical training setting. The key to the research process was the cooperation and teamwork of the students (Zuber-Skerritt 2005b). Their personal views of the projects as vehicle for professional growth provided the foundation to the subsoil for the imaginary tree's roots. Therefore, a nominal group technique was administered to test insight into the potential of successive mini-projects, as well as to verify strengths and weaknesses for the participants involved in the ALAR approach.

After the first cycle, five students (engaged in mini-projects at the facility for that period) were involved in a nominal group technique, and consensus was reached on three questions. What is the potential of ongoing mini-projects as part of clinical training in the fourth year of the occupational therapy undergraduate course? What are the most positive aspects about being part of an action research process at *Ons Tuiste*? What are the most negative aspects about being part of an action research process at *Ons Tuiste*?

By the end of the second cycle, another group of nine students (placed at the facility for this period of time) had participated in the project. As part of data triangulation, these nine students completed a questionnaire asking the same three questions on which consensus was reached after the first cycle, but listing as a choice of answers to all the ideas generated during the first nominal group. After studying these answers, participants individually prioritised the three options provided that they most agreed with for each question.

3.4 Identifying the potential of ongoing mini-projects

In order to portray how findings from the first nominal group resonated with data from the second group, these are discussed consecutively.

The five prioritised answers to the question “What is the potential of ongoing mini-projects as part of clinical training in the fourth year of the OT undergraduate course?” were:

There is an ultimate goal; it is not only for the purpose of the case study and then later rendered worthless [because it is not implemented]. [1]

Work towards a defined outcome with an understanding of what is to be accomplished and how it should be done. [2]

Skills of the student are developed, specifically in management. [3]

Skills expected of an occupational therapy practitioner are developed and these contribute to one's future. [4]

Promotion of both the profession and the specific area of work. [5]

When considering the responses which focused on the advantages of successive mini-projects, the purposefulness (or application value) of the projects appeared to be of the utmost importance. The students who invested their time, energy and effort into conducting research wanted the project's outcome to be useful.

At the end of the second cycle, the next group of nine students added the same value to three of the five concepts identified by the group (of five participants) after the first cycle. The fact that the third perception [3] (focusing on skills development, specifically on the managerial level) did not receive priority may be because it could be integrated with the fourth concept. This fourth concept [4] may be assumed to include most skills associated with being a future professional.

For students involved in the first cycle, the idea of establishing and developing a new service area at *Ons Tuiste* appeared to be a profound reality. This may explain why students selected the fifth insight [5] as a priority; they needed to promote the service to the residents and the staff, while they were developing it.

Upon considering the feedback from all fourteen students, it was evident that the majority of the participants agreed on the importance of reflection on other participants' contributions (78%), evidence-based practice (89%), and acknowledgement of the role of the literature (100%).

It is interesting to note that aspects such as personal and professional reflection, linked directly with the action learning component

of the research, were not listed as priorities by either of the groups during the nominal group technique process. This trend corresponded with the researcher's impression that reflection was often very superficial and not done for its intrinsic value. It appeared that reflection was completed simply because it was an action required by the supervising clinician during certain stages of the students' clinical placement.

3.5 Identified positive experiences

Besides the value of mini-projects for participants, the second question pinpointed factors considered to be the most positive aspects about being part of an action research process at *Ons Tuiste* at the end of the first research cycle. The predominant insights listed were:

Experience growth as a student – gaining confidence, as well as a positive attitude towards research projects. [1]

Work towards a defined outcome with an understanding of what is to be accomplished and how it should be done. [2]

Students from the second cycle indicated on the questionnaire that they agreed with the first group in prioritising the first insight [1]. The questionnaires completed by these nine students indicated as a second priority [2] that positive experiences of involvement in action research appeared to be linked with the enthusiastic input and support provided by the supervising clinician (in this case the first author). "Enthusiasm of the occupational therapist" was identified as a positive experience due to involvement in the research projects. Working on a mini-project allowed a different type of interaction for the student and supervising clinician as they were collaborators in a research process of advancing therapy for residents at the care facility. A recent study by Mullholland *et al* (2006) supports this finding and stresses that students value a clinical supervisor who creates a positive learning environment, strives to be a role model and facilitates learning.

With specific reference to the ALAR approach, the students may be regarded as direct stakeholders in the research process (Dick 2002). This approach encouraged the supervising clinician to honour the

involvement and contributions of the participating students, which might have added to the students' experience of feeling valued.

Although not listed as a priority, the findings indicated that all the students valued the accessibility of previous assignments, project findings and project evaluations. This information was kept in a miniature filing system, affectionately referred to as "the purple satchel". Zuber-Skerritt (2005b) identifies this resource for information as a quasi-historical approach that may potentially have contributed to the trustworthiness of the researcher's investigation.

3.6 Identified negative experiences

True insight into the experience can only be gained if negative aspects relating to involvement in an action research process are elucidated. The group prioritised their negative experiences after the first action research cycle as:

A lack of fulfilment as completion of the whole project would not be experienced. [1]

Staff at the facility did not appreciate the value of the ongoing study. [2]

External factors as part of the research that are beyond students' control [for example, waiting for quotations from suppliers. [3]

The questionnaire confirmed the above three decisions. Overall, it appeared that the predominant negative experiences identified were not at all related to the research process itself. Students held a negative opinion regarding the external factors beyond their control, in particular staffing issues (for example, an understaffed situation and lack of training for auxiliary nurses). These issues would, in the long term, negatively affect the implementation of their research findings and might result in their hard work not being put to use for the benefit of the residents.

These issues were realistic in the South African context where a lack of funding often restricts programme development. Due to the staffing issues identified (for example, in Project 18), canvassing for and training of volunteers to become involved in the 24-hour dementia care ward were incorporated into the process as the project progressed.

These findings therefore confirmed that the students, as direct stakeholders in the research process, valued being involved in mini-projects, as these contributed to their professional growth. The students found it frustrating that they would not be able to be involved in the overall process of implementing their research, but appreciated the fact that their hard work would be put to use (cf statement one [1] in section 3.4). Therefore, fieldwork education is the fertile soil for action learning related to gains for both the students and the clinical supervisor.

The next aspect to be addressed is what the clinical supervisor/researcher perceived as gains that contributed to the evolution of the projects.

3.7 Subsoil: research-informed practice

At the onset of this investigation, the researcher wished to address the quality of her practice by applying continuous research that could generate evidence for practice. The endeavour was to establish a service that would provide “the best clinical choices for client and therapist alike” (Nicholson 2006: 14). This approach allowed the researcher to expose students to an experience that would enhance their understanding of the evidence-based practice (EBP) agenda.

An obstacle to overcome as part of this process was to identify an appropriate outcome measure for persons with severe dementia. In chronic disorders, such as dementia, the difficulty of measuring quality of life, improvements, slowing down or the maintenance of skills are well documented (Schofield 2006, Baillon *et al* 2005). Students experienced how the same activity where, for example, sensory stimulation was used as a technique to enhance the residents’ participation in a hand-washing activity, resulted in different forms of engagement (Project 14). This, for example, manifested in such a way that a Sesotho-speaking resident who had mothered six children would focus on this activity and could be prompted to wash garments. Another example was an Afrikaans-speaking resident who, as a former nurse, focused on the hygienic component when engaged in hand washing. Both, however, appeared satisfied with the result of the engagement and were able to focus on and complete the washing activity.

Addressing different cultural backgrounds aspires to successfully meet the challenge advocated by Illott *et al* (2006) who recommended that developing countries should construct relevant evidence for their specific settings. The search for an appropriate outcome-measurement tool (Project 17) revealed that such a tool should address the needs and cultures of clients, while considering the resources available to therapists. What appeared to be a straightforward application of a tool to verify whether the impact of the OT person-specific programmes could be numerically demonstrated resulted in greater understanding. The student who was involved in Project 17 suggested some qualifying characteristics of tools to measure outcomes within long-term care during her project presentation.

In addition to outcome measures, it is apparent that the ALAR approach followed in this instance allowed a first-hand encounter with EBP principles. Although research is only one means of encouraging EBP, Forsyth *et al* (2005) cite two publications supporting their view that graduates are the key to an EBP future and that they should be prepared by both engagement in research and development of skills for critical assessment of current theory and research, namely Scottish Executive 2002, Jones & Higgans 1995. Training should therefore provide emerging practitioners with the skills, support and encouragement to become critical consumers of research (Nicholson 2006), as these projects attempted to do.

What OT students know/learn, how they behave and the ways in which they demonstrate their accountability (Bossers *et al* 1999), are closely linked with their ability to integrate research into practice (Bennett *et al* 2006). Therefore, the mini-projects were an ideal way to introduce accessing, applying and/or generating research on a small scale to undergraduate OT students.

The actions associated with accessing, applying or generating research did not necessarily guarantee insight into a potential researcher role for the students. The researcher often observed that actions (in other words, being overly focused on doing) deterred students from deep thinking. A useful explanation taken from the tree metaphor was that often insufficient nutrients and water were allowed to move through the zone of leaching to feed the subsoil.

In light of the above, it is important to consider the challenges that need to be addressed in order to ensure optimal development.

3.8 Zone of leaching: identified challenges

It was evident that the successive mini-projects were instrumental in developing the service in the dementia care unit. As the action research process evolved, however, the amount of archived material from previous projects accumulated. Students in the second action research cycle found the vast amounts of information available to be a burden rather than a comfort.

The effort put into each mini-project as well as the material produced by individual end-products complicated the selection for presentation purposes and deterred students from keeping to the specified time limit. A report by the 2006 external examiner for the final-year students' November examination confirmed that the mini-projects might be too extensive, as these were merely a subsection of the clinical module that accounted for only a third of the total number of credits. Van der Reyden (2007: 1) in her report states:

The research component now introduced is excellent although it places considerable stress on the student. A concern is that the projects that each student needed to undertake were perhaps too extensive; it is recommended that this be reviewed [...]

Besides getting lost in data accessed and generated, the relationship between the supervising clinician and the students should also be considered. As mentioned earlier, the students were direct stakeholders in this ALAR process. The researcher should therefore acknowledge potential researcher and participant biases – for example, the researcher seeing what she wanted to see and students saying what they thought she wanted to hear.

In a direct attempt to reduce participant bias, the students were in their orientation only informed of the mini-projects as part of an ongoing process to set up person-specific programmes in the dementia unit of the facility. Only at the end of each action research cycle were the students confronted with the potential impact of the researcher's study in addition to their project involvement. In the two groups where the

nominal group technique was applied for data generation, the researcher introduced the ALAR concept and the action learning approach. This additional background was given to encourage the students to reflect. The nominal discussion groups took place outside the clinical setting. The students could therefore embrace their role as collaborators to evaluate the action research process followed, without fear of being penalised for their views in a pending clinical assessment.

The researcher therefore fulfilled a more Socratic role during the execution of each mini-project by encouraging the students to participate and reflect. In the nominal group technique the role of an emancipator was performed to empower students to recognise their individual contributions to the successive research process. These dual roles enabled the researcher to gain information which the students did not reveal or consider while they were involved in the projects. Being consumed with action during the execution of their assignments often prevented students from realising the important role of the research process. Insight into this aspect surfaced only after the completion of their projects.

Information overload and a constant awareness of being investigated may have deterred the development of the successive mini-projects and hindered meaningful learning experiences. The ALAR approach, however, provided the clinical supervisor, as a researcher, with the advantage of changing her role to best fit the circumstances and promote the teaching process.

3.9 Topsoil: ALAR as facilitator for growth

Topsoil is the most fertile of all layers and encourages rapid growth. In an attempt to qualify the merits associated with the ALAR approach, the researcher felt encouraged that all the core values identified by Zuber-Skerritt (2005b) were adhered to:

- Collaboration and team spirit
The cooperation of all 14 students involved thus far resulted in the production of meaningful, successive mini-projects.

- **Synergy**
The current person-specific programmes utilised in the dementia unit are the result of a combined effort. A direct result of these programmes was the establishment of a design and structure for the developing of successive mini-projects.
- **Openness**
The meaningful learning core of this approach encouraged the researcher to find different feedback methods, ensuring that the design and structure of the mini-projects were improved with every new assignment given.
- **Focus on the learning process**
Each phase of the action research cycle as advocated by Tripp (2003) refined the researcher's understanding and advanced her knowledge through reflection and critical evaluation.
- **Symmetrical communication and trust**
Comprehending the value of each student's contribution to the success of the programme ensured the building of trust which, in turn, encouraged unrestrained communication. As a clinical supervisor, the researcher could assist students in the learning process associated with executing the projects. As primary stakeholders, the students collaborated to ensure that the researcher, as clinical supervisor, gained insight into the structure and design of the projects.
- **Honesty**
Identifying areas for skills development was vital in order to ensure that the researcher's weaknesses did not continue to hamper the development of the design and structuring of the mini-projects. Opportunities for feedback outside formal assessments encouraged open and honest communication.
- **Flexibility**
Various methods were applied to monitor and direct the ALAR process at *Ons Tuiste*. Each mini-project was different and was executed by a unique individual. The researcher found that both these factors were acknowledged within the eclectic methodology of the ALAR approach.

In addition to the strengths identified, minute obstacles would often impede progress and these should be viewed from a different angle. Freshly fallen leaves under a tree might be deemed unsightly; however, they could fulfil a useful function if allowed to decompose and nurture the soil. Some insights were initially perceived as obstacles, as indicated below.

3.10 Surface litter: overcoming practical obstacles and other implications

The students' participation in the consecutive mini-projects at *Ons Tuiste* revealed some insights that could be useful in other fieldwork education areas. The researcher's reflective journal generated useful data on the first two action research cycles. These insights related directly to the design and structure of the assignments given to the students and attested to the contribution and clarity of this investigation. The researcher recommends that any student receiving an assignment for a mini-project should be aware of:

- Identifying the verbs/actions in the assignment in order to focus the direction of her actions (to compile a checklist, or to evaluate the appropriateness of a suggested programme).
- Applying the information generated – share all aspects of the findings, not merely the outcome.
- Being practical in approach – know what is realistically possible for the area where the findings will be implemented.
- Defining and specifying research actions involved in generating data, instead of merely listing actions.

These practical lessons learnt led to a service that endeavoured to embrace the learning milieu encouraged by action research. The established learning-teaching environment contributed towards continuing the emergent process of implementing projects for improved future practice. In the early stages of the project development process the ALAR appeared to empower the students to make unique contributions from their personal experience during fieldwork education.

The tree analogy helped the researcher to focus on teaching and learning at *Ons Tuiste* as a micro-environment. A tree, however, cannot

grow in isolation. The influence of other fieldwork education experiences preceding involvement in mini-projects at *Ons Tuiste*, as well as other institutional barriers or opportunities provided by the undergraduate training programme at the UFS were not considered for the purposes of this investigation. Excluding the nurturing and/or prohibiting affects of other factors in the garden of student development should be recognised as a potential limitation and would warrant future research.

4. Conclusion

This article elucidated the findings that contributed to the evolving design and structure of successive mini-projects. The combination of the current structure and guidelines provided by the occupational therapy department at the UFS and an ALAR approach encouraged action and concrete experience for a meaningful learning opportunity. Like a flourishing tree in fertile soil, this approach should be introduced in the occupational therapy profession at undergraduate level in order to access, apply and/or generate research on a small scale, thus promoting research to inform practice.

A closer investigation of the tree analogy revealed that the tree trunk delineated the context within which the successive mini-projects were applied. The researcher, as clinical supervisor, shaped the context by her management of the fieldwork education at *Ons Tuiste*. As manager she had to consider the demands at the facility in combination with the outcomes of each mini-project and then prioritise the focus of the next project. Over a period of time the natural progression of the mini-projects was clustered into various branches with similar themes. However, the ALAR approach specifically provided soil that was conducive to optimising growth during the learning process. The “plan, act, describe, review” cycle not only facilitated the identification of obstacles and challenges, but assisted with practical matters. For example, the critical analysis of completed projects led to the refinement of written assignments. Overall, the tree analogy provided a visual portrayal of progress made due to mini-project involvement.

This confirmed the role of each student in the learning process, and may orientate and motivate future students to become involved.

In conclusion, the ALAR approach, directing successive mini-projects, provided a unique opportunity for OT students at the UFS to become part of an existing research community as advocated by Forsyth *et al* (2005: 262). In the first instance, this experience allowed students to actively engage in research. Secondly, students could also experience the outcomes of previous projects that had been implemented. Thirdly, it permitted the students to envisage what their involvement and effort in the current projects would establish and how that could be expanded in future. Forsyth *et al* (2005: 265) describe one of the primary benefits of such a course of action as the knowledge that can be applied by those who assist in generating it. This practical experience of research impacting on a clinical setting could be the first step towards establishing a research culture among undergraduate students in occupational therapy, as well as in similar training contexts.

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