

**USING RESOURCE BASED LEARNING TO CREATE SUSTAINABLE
LEARNING ECOLOGIES IN HIGHER EDUCATION**

BY

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DECLARATION

I declare that the thesis, *USING RESOURCE BASED LEARNING TO CREATE SUSTAINABLE LEARNING ECOLOGIES IN HIGHER EDUCATION*, hereby handed in for the qualification of Pholosophiae Doctor at the University of the Free State, is my original piece of work which was not previously submitted to any University or any publication house. I hereby cede the University of the Free State the copyright of this work.

M.A. MALEBO

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DEDICATION

THIS THESIS IS DEDICATED TO THE FOLLOWING PERSONS;

My grandfather, NTOELENG “NTHOLENG” JOHN MALEBO, from whom I received inspiration, unwavering emotional and material support. You are the best for ever.

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ABSTRACT

Higher education in South Africa and the world have gone through various and evolving changes, including the funding of student fees, pedagogy of teaching and learning, access and throughputs rates. The use of technological devices and resources to enhance teaching and learning constitutes what in my career seems to be the most striking. This study focuses on the use of Resource Based Learning (RBL) tools in creating sustainable learning ecologies in Higher Education (HE). The United Nations (UN) reiterated the importance of implementation of sustainable development and sustainable learning ecologies through its Millennium Development Goals (MDGs). This study's aim was to look at the usage of RBL to create sustainable learning ecologies in HE. The methodology was qualitative research in which co-researchers were used to generate data. The data generated from this study was analysed using Critical Discourse Analysis (CDA). However, the current pedagogical approach was dissected to achieve a deeper understanding of the democratic principles of teaching and learning. Education is supposed to be free for students, and allow them to be active participants collaborating in their curriculum. For understanding the democratic and emancipatory nature of student engagement through the usage of RBL tools, Critical Emancipatory Research (CER) was used as an approach. Research was used to clearly understand the relevancy of freedom, equality and the emancipatory nature of RBL in creating sustainable learning in HE. A similar approach of student-centred learning is supported by this study. The authoritative nature of learning in which the lecturers simply provides instruction to student is highlighted. Although the study was conducted in South Africa the results can be generalized to other countries and it replicated, both considered as strengths of this research. The findings indicated both positives and negatives regarding the use of the learning tools in higher education. There are also changes in the way learning is conducted as there is shift in the instructional or traditional way in which lecturers provide the learning material and offer the course. There is also an indication that through new learning methods, such as RBL, education can be made more easily accessible to the marginalized, with virtual education facilitating this. Some of the findings indicate that the traditional methods of teaching and learning disadvantage the freedom and

emancipatory mechanisms of quality education. The study makes a strong contribution to knowledge, despite certain acknowledged limitations of this study.

Key words: Resource - Based Learning, Sustainability, Learning ecologies, Higher Education

OPSOMMING

Hoër onderwys in Suid-Afrika en die wêreld het deur verskeie veranderinge. Die veranderinge sluit in die befondsing van studentegelde, pedagogie van onderrig en leer, toegang en deurse tariese. Die revolusionêre veranderinge sluit in die gebruik van tegnologiese toestelle in onderrig en leer. Hierdie studie fokus op die gebruik van hulpbrongebaseerde leer gereedskap in die skep van volhoubare leer ekologieë in Hoër Onderwys (HO). Verenigde Nasies (VN) het weer ook die implementering van volhoubare ontwikkeling en volhoubare leer ekologieë deur sy Millennium Ontwikkelingsdoelwitte. Hierdie studie doel was om te kyk na die gebruik van hulpbrongebaseerde gereedskap in die hoër onderwys. Die tipe metodes wat in hierdie studie was kwalitatiewe navorsing waarin mede-navorsers, is gebruik om data te genereer. Die gegeneer uit hierdie studie data is ontleed met behulp van kritiese diskoersanalise. Maar die huidige pedagogiese benadering gedissekteer om 'n dieper begrip van die demokratiese beginsels van onderrig en leer te kry. Ons moet onthou dat onderwys is veronderstel om vry te wees vir die studente, ook aktief aan deelneem, en saam met hul kurrikulum. Om te kry in die greep of die grap van die begrip van die demokratiese en emansipatoriese aard van betrokkenheid van die student deur die gebruik van hulpbrongebaseerde leer gereedskap, was krities emansiperende Navorsing gebruik as 'n benadering van verstand. Navorsing is gebruik om duidelik te verstaan die relevansie van vryheid, gelykheid en emansipatoriese aard van die gebruik van hulpbrongebaseerde leer in die skep van volhoubare leer in hoër onderwys. Die soortgelyke benadering van student-gesentreerde leer ondersteun van hierdie studie. Die gesaghebbende aard van leer waar die dosente verskaf net instruksies aan student word ook heighted. Selfs al is die studie is in Suid-Afrika die resultate van hierdie studie veralgemeen kan word kruis ander lande en dit herhaal kan word wat is die krag van hierdie navorsing. Die bevindinge van hierdie navorsingstudie het aangedui dat daar positiewe en negatiewe verband met die gebruik van die instrumente vir die leer in hoër onderwys. Daar is ook verander in die manier leer, wat as daar verskuiwing in die instruksionele manier of tradisionele wyse waarop dosente verskaf die leermateriaal en die aanbod van die kursus. Daar is ook 'n aanduiding dat ons deur die nuwe leer metodes soos die gebruik van hulpbrongebaseerde onderwys maklik toeganklik vir die gemarginaliseerde en virtuele onderwys moontlik kan wees.

Sommige van die bevindinge dui daarop dat die tradisionele metodes van onderrig en leer nadeel van die vryheid 'n bevrydende meganismes van gehalte-onderwys. Laastens hoofstuk ses van hierdie studie dui die sterk bydrae tot die kennis en die beperkings van hierdie studie.

Sleutel woorde: brongebaseerde leer, volhoubare leer, ekologie, hoër onderwys

LIST OF ABBREVIATIONS AND ACRONYMS	
BERA	British Educational Research Association
CDA	Critical Discourse Analysis
CER	Critical Emancipatory Research
CPP	Career Preparation Program
EFI	Education First Initiative
ESA	Ecological Society of America
ESD	Education and Sustainable Development
GCP	Global Citizenship Project
GMID	Graz Model of Integrative Development
HE	Higher Education
ICT	Information Communication Technology
LD	Lifelong Education
LTSM	Learner Teacher Support Materials
MDG	Millennium Development Goals
NCHE	National Council on Higher Education
NEEP	Need for Education and Elevation Program
NWBL	Negotiated Work Based Learning
OLE	Online Learning Environment
PAR	Participatory Action Research
RBL	Resource Based Learning
RSA	Republic of South Africa

SA	South Africa
SED	Saskatchewan Education Department
UFS	University of the Free State
UN	United Nations
UNESCO	United Nations Educational, Scientific and Cultural Organization
UNIN	University of the North
US	United States
USA	United States of America
WBLR	Web Based Learning Resources
ZPD	Zone of Proximal Development
OLE	Online Learning Environment
LTSM	Learner Teacher Support Materials

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CHAPTER 1

INTRODUCTORY BACKGROUND ON USING RESOURCE-BASED LEARNING IN CREATING SUSTAINABLE LEARNING ECOLOGIES IN HIGHER EDUCATION

1.1. INTRODUCTION AND BACKGROUND TO THE STUDY

The purpose of this study is to investigate how can the resource-based learning (RBL) be used to create sustainable learning ecologies in higher education. UNESCO (2009:1) stated that an academic revolution has taken place in higher education in the past century, marked by transformation unprecedented in scope and diversity, whilst Aina (2009:23) stated that higher education contributes to the formation and deployment of human capital, the cultural and social construction of values and meaning, and the capacity for individual and collective emancipation from ignorance and domination. This suggests that higher education is facing challenges concerning new methods of teaching and learning of which resource-based learning may be appropriate.

According to Butler (2012:221) RBL;

...involves establishing context for, tools for acting on and with, and scaffolds to guide the differentiation interpretation, use, and understanding of resources in ways that are consistent with the epistemology, foundations, and assumption of a given learning model.

It is a pedagogical approach associated with inquiry and project-based learning in which students engage with a wide range of learning resources rather than from class exposure. It is evident from the discussion above that there is an urgent need for new learning approaches to be implemented. Mcmillin and Dyball (2009:55) stated that universities can optimize their role as agents of change for a sustainable future by adopting a whole-of-university approach to sustainability, whilst for Moore (2005:76) universities begin to consider sustainability as a core value in education but the challenge is that the current learning models of university education are not capable of facilitating action to promote and create sustainable learning ecologies in higher education. Sustainability, according to Moore (2005:78) also refers to the

process or strategy of moving toward a sustainable future, whilst Neubauer, Hug, Hamon and Steward (2011:14) argue that ecology can be described as a structure that facilitates the organization of patterns of life or learning: Our traditional educational ecology has been the classroom, including desks and blackboards – our traditional educational ecology has been intentionally designed rather than emerging through self-organization. Hlalele (2013:564) postulates that the ecology is extended to include the following characteristics of a learning ecology: a collection of overlapping communities of interest, cross pollination, constant evolution, and self-organization.

It is evident that new learning approaches can help sustain learning ecologies in higher education, regarded by Mapasela, Hlalele and Alexander (2012:91) as progress in educational transformation so that learning can be sustainable, dependent largely on collaboration of teachers, learners, parents and different stakeholders. The collaborative act is a positive sign of alliance formation. Das and Teng (2000:31) found that the resource-based view suggest that the rationale for alliance is the value creation potential of all partners, therefore it is valuable and critical for the educational system to accommodate new learning approaches for sustainable learning ecologies around the world.

1.2. THEORETICAL FRAMEWORK

Critical Emancipatory Research (CER) was used in this current study, with Newton and Burges (2008) having stated that educational action research can be classified as emancipatory, practical, or knowledge-building, and as such the conception of validity ought to reflect the different modes of research. On the other hand, action research is a research mode known as emancipatory, enhancing or critical science. Stahl (2006:87) mentioned that critical research aims at emancipating those who are alienated because of the structure of society and production, notably those who are excluded from the discourses that shape society.

One vital factor of using CER is that “both the researcher and the participants are immersed in a quality conversations and intersections as interpreted from their informed positions” (Nkoane 2012:99), whilst Mahlomaholo (2009:225) posits that in CER the researched are treated and handled with respect and recognition of

equality between them and the researcher. Using CER in this study was justifiable in two ways: first, co-researchers in the study were in control of their planning; secondly, the participants were free to air their positive or negative views concerning the content of the study. According to Nkoane (2012:99), the concept 'critical' in CER refers to 'denaturalising' language to reveal the kind of ideas, absences and subtle meaning which are taken for granted in text. Boog (2003:426) stated that 'emancipation' implies that the generated results of action research are two-sided: 1. specific improved action competencies of the researched subjects in the local situation in the specific research project; and 2. general enhanced actions competencies in other comparable problematic situations in the future, sometimes even in broader context.

Henry (2009:131) stated that commonly-employed perspectives on learning tend to differentiate between two dimensions: the mechanism of learning (social versus individual learning) and properties of learning information being learned (empirical versus normative knowledge), and that "an integrated framework that transcends all of this perspective is needed". According to Solomon (2000:8) learning ecology is a vast and intricate network of systems, with a change in one part affecting the others, whilst Barron (2006:196) postulated that a learning ecology framework draws on ecological perspectives as well as constructs developed from sociocultural and activity theory. As the framework of choice in this study, CER had support for its usage in the South African context, to execute the aims of this study, i.e., to identify resource-based learning appropriate to creating sustainable learning ecologies.

1.3 RESEARCH PROBLEM, QUESTION / OBJECTIVES

Creating sustainable learning ecologies in higher education has been attracting the attention of researchers recently (Rudebeck, 2013:8; Smith, Vasudevan & Tanniru, 1996:42; Hlalele, 2013:561; Mapasela, Hlalele & Alexander, 2012:91), but in all of these studies RBL is not an area of interest. This current study will contribute to knowledge creation in RBL for sustainable learning ecologies in higher education. One critical issue is that lectures still dominate in most universities, with students more depended on lectures notes and prescribed textbooks. This old-fashioned approach leaves students unable to critically evaluate or create their own

suggestions or proposals. Another critical issue is that the use of traditional teaching and learning approaches is dwindling, and there is an attempt to rely on new approaches to meet the needs of a changing student learning culture. RBL, in whichever form (e.g., open learning, distance learning, flexible learning, technology based learning) can be an alternative means of safeguarding high quality education, “in the face of a greatly enlarged student body unaccompanied by a commensurate increase in staffing and other resources.” (Rowntree, 1998:12).

The purpose of the study is to make a contribution towards the creation of sustainable learning ecologies in higher education through the use of resource-based learning, in particular the following;

- To identify RBL tools suitable for the creation of sustainable learning ecologies
- To determine the context for the creation of sustainable learning ecologies
- To scaffold RBL teaching and learning experiences for creation of sustainable learning ecologies
- To optimize RBL as an agent of change for a sustainable learning
- To recommend ways in which RBL can be used to create sustainable learning in higher education

The research question posed is;

- How can educational researchers use RBL to create sustainable learning ecologies in higher education?

1.4 RESEARCH DESIGN AND RESEARCH METHODOLOGY

The current study adopted a qualitative approach, which according to Watson and Watson (2011:63) is a critical, interpretive, and multi-methodical in function. It is also conducted according to the principle of CER and action research, which (Reason and Bradbury; in Brydon-Miller, Greenwood & Maquire, 2003) define as a participatory, democratic process concerned with developing practical knowing in the pursuit of worthwhile human purposes, grounded in a participatory work view which we believe is emerging at this historical moment. It also seeks to bring together action and reflection, theory and practice, in participation with others, in the pursuit of practical solutions to issues of pressing concern to people, and more

generally flourishing of individuals and their communities. According to Mahani and Molki (2012:209) action research is often a cooperative endeavour between educators who work in a similar education setting and those who are in pursuit of finding a solution or clarification to a problem:

The emancipatory type of action research demands that all the participants should be involved in the research equally and there should be no chain of command between the researcher and all participants (Mahani & Molki, 2012:211).

CER is the ideal approach to deal with sustainable learning ecologies, and action research has been in use by many researchers (Burns, 2007:11, in Patterson, Baldwin, Araujo, Shearer & Stewart, 2010:145).

Co-researchers in this study were first-year Psychology students of the University of the Free State, QwaQwa campus and the co-researchers of various ethnic groups. The co-researchers are the individuals who took part in this study. They five female's and five male's as well as two facilitators.

Data was gathered through face-to-face discussions, group discussions, and by co-researchers who shared common phenomenon being clustered together. It was systematically collected and meanings, themes and general descriptions of their experience analysed within a specific context. Critical discourse analysis was used in this study. As Fairclough (1989, 1995 in Janks, 1997:329) stated, CDA consists of three dimensions: (1) object analysis; (2) the process by which the object is produced and received by human subject; and (3) the socio-historical conditions that govern these processes. Different dimensions would require different types of analysis: (1) text analysis; (2) processing analysis; and (3) social analysis. These are the dimensions through which audio tapes and data gleaned from observations data were analysed.

1.5 VALUE OF THE RESEARCH

The value of this research is multifaceted, firstly, unearthing RBL as a critical model or approach to creating sustainable learning ecologies in higher education, secondly, identifying challenges in its implementation so as to come up with

appropriate strategies of implementation, and thirdly, to brief and inform policymakers in the higher education sector to use it to create sustainable learning ecologies in higher education.

1.6 ETHICAL CONSIDERATIONS

Ethical considerations involves the privacy and confidentiality of co-researchers and the whole research process. Informed consent, was indicated from the letters signed by the co-researchers informing on avoidance of causing harm to co-researcher's mentally, physically, or otherwise; and preservation of anonymity of participants were taken into consideration. Ethical procedures were important part of all research process (Stringer, 2007:54), and the ethical clearance allowed me to conduct the study. The institution (University of the Free State; school of education) provided the current researcher the legal route of conducting research with the co-researchers by giving the author the ethical clearance letter with this number [UFS-EDU-2014-052].

1.7 LAYOUT OF CHAPTERS

Chapter one has presented the background, problem statement and objectives of the study. Chapter two provides the theoretical framework, the paradigm of critical emancipatory research and resource-based learning. Chapter three describes methods of data generation. Chapter four details the methods of data presentation, analysis and interpretations. Chapter five presents the findings, discussions and summary. Chapter six makes recommendations on the usage of RBL in creating sustainable learning ecologies in higher education

CHAPTER 2

THEORETICAL FRAMEWORK AND LITERATURE REVIEW ON USING RESOURCE-BASED LEARNING TO CREATE SUSTAINABLE LEARNING ECOLOGIES IN HIGHER EDUCATION

2.1 INTRODUCTION

The aim of this study proposes how Resource-Based Learning (RBL) can be used to create sustainable learning ecologies in higher education. For this aim to be achieved the following are discussed; (1) Critical Emancipatory Research (CER) as the theoretical framework; (2) a brief historical background or origin of CER; (3) RBL in Higher Education; (4) CER as an educational paradigm, as a research paradigm, in higher education research, and as a learning ecology framework. This chapter examines operationalization of content terminologies or concepts and the explanation of how they were achieved in this study. Lastly, the literature related to the objective of this study are discussed.

2.2. CRITICAL EMANCIPATORY RESEARCH AS THE THEORETICAL FRAMEWORK UNDERPINNING THIS STUDY

A theoretical framework is a guiding principle or yardstick which can provide a clear academic and scholarly direction to research. The terminological building blocks or collection of concepts of CER were part of the theoretical framework, with theories related to RBL in creating sustainable learning ecologies in higher education. Importantly, “critical research aims to emancipate those who are alienated because of the structures of society and production, those who are excluded from the discourses that shape our society” (Stahl, 2006:87). The British Educational Research Association (BERA) stated that in critical research the word ‘critical’ is being given a distinctive meaning, however ‘critical research’ explicitly extends this process of self-assessment to social practice and institutional arrangement, and the evaluation of these is usually made in terms of some notion of enquiry or social justice. Several authors (Elizondo, Alberto, Zavala, Olga, Avarado, Suazo & Veronica 2013:425; Adam, 2001, 139; Boog, 2003, 427) have found that the interest

of the emancipatory paradigm is to recognize the psychological cognitive, moral, gender, political and social reality of all participants of research, including the researcher, with the aim of focusing on the understanding of the group to provoke a systematic change. It allows for transformation of practice and structures, through empowerment, creating collaborative relationships, developing strategies of comradeship, potential, negotiating power and participative environment by means of action reflection, compromise in dialogue, listening, questioning, setting problems and, above all, promoting critical thinking.

My reason for using the emancipatory paradigm in relation to this research project is that participants are seen as humans and are regarded as such. The research process involves interaction between the co-researcher and the researcher, with both parties being on an equal footing. It changes the status quo, from one-sided domination of the poor by elites and encourages units and elements to work together with the purpose of supporting harmonious relationship between the teacher and the learner, the students and the lectures, and all the structures of society combined.

CER as a theoretical framework bases its ideas on fair social practices and freedom for all, as well as equality amongst communities of interest, in this study students in higher education. The main aim of the CER researcher is to bring about change, as he/she is not the dominant character but part of a collaborative relationship that is on an equal footing with the students. He or she makes a contribution to a larger active participation and student engagement among its members. Questioning, reflection, language and communication are vital for the actions and reflections of students to facilitate the process of learning. As with the South African apartheid regime, and the National Socialist and Fascist parties in Europe, “there were conflicts’ / struggles in their social spheres” (Habermas, in Terry, 1997:273), between administrative, economic, and bureaucratic realms, and the life world of daily lives. Terry (1997:273) characterizes the goal of the system as the colonization of the life-world, and sees language as the means of achieving rational consensus and as the primary mode of social interaction by which the process of colonization may be resisted. Habermas sees social conflicts and struggles as capable of being resolved by communication or common language in which there will be consensus among the parties involved,

The fundamental principle of CER is equality of individuals and collectiveness in accomplishing societal issues and concerns. Utopian concepts such as democracy, freedom and empowerment, as stated in the literature, are critical in the course of sustainable development. Relating these to creating sustainable learning ecologies in higher education, students are empowered, actively engaged in their learning, and encouraged to work as a collective force on an equal basis with the instructor, lecture or teacher. Learning takes different forms and shapes, depending on the context, philosophy and paradigm specific to the module. Students can learn from their larger system, that is the university, and critically question their ecologies of learning in a free and conducive environment. In CER, all the research participants had the political and psychological will to contribute to existing knowledge creation, as truth and knowledge creation is not the individual ownership of a particular theory or epistemology. It is used to examine the strategies of change in the student population and bring about critical thinking in the participants as individuals, not suppression by capitalism, apartheid or fascism.

In my opinion, CER strengthens this study in the following way:

- An explicit statement of theoretical assumptions permits the reader to evaluate them critically
- The theoretical framework connects the researcher to existing knowledge
- Articulating the theoretical assumptions of a research study forces one to address questions of why and how move from simply describing a phenomenon observed to generalizing about various aspects of it
- This theoretical framework helps to identify the limits to those generalization.

Peca (2000:120) stated that the essence of critical theory lies in the person's exposure of the dichotomy between the real and ideal, and goes beyond mere 'muckraking' to action, containing within its nature an imperative to bring real closure to the ideal because its goal is the emancipation of human capacities: "The imperative for change is essential in critical theory because what are exposed are not only the problems of society but also the ideal resolutions of these problems and by nature, man evolves toward the ideal" (Mapotse, 2014:503). CER deals with empirical factors which might have been overlooked by the positivists, fascism and reductionists.

Splichal (2008:20) in his research study asked “*why be critical?*”, his response to which was the role of critical theory cannot be reduced to that of describing and explaining empirical reality, and it has to question existing conditions in terms of their historical preconditions and future possibilities. Also, it cannot live with what is or was empirically existing, prevalent or “normal”, or “anomalous” in a given period and historical context, rather it has to permanently broaden the horizons of what is relevant today and possible in the future, identify the seeds of what may stimulate social transformation, and trace its direction. CER, as with critical theory, according to Andersen and Bilfeldt (2012:4) can be considered as a critique of unjust and ratified social structures, insisting upon the need to deconstruct ‘frozen reality and culture’. In CER the researcher is not an authority or in a controlling mode but he or she is part of the research process. Considering the latter factor, Andersen and Bilfeldt (2012:17) stated that researcher participation in sustained change process, from the identification of problems and vision development to the mobilization of change agents and handling of barrier and conflict along the way, offers unique possibilities to develop knowledge on innovative processes and what inhibits and encourages the possibilities for better quality in the care sector (educational sector). Hammersley (2012) provides the following powerful summary:

Critical researchers today inherit quite a lot from critical theory. They are usually committed to doing research that is based on, and is designed to contribute to, a more comprehensive or fundamental understanding the world than that available to common-sense, and one that is geared to abolishing particular kinds of social division. This requires that the phenomena investigated should be studied against the background of the wider socio-historical context, since only by changing this will social division be overcome.

However, CER and critical theory, as well as positivism, reductionism and other epistemologies have the ability to work as collective, as the truth cannot be objective from the perspective of one paradigm. There is a multidisciplinary approach to the enquiry but critical theory should be considered an integral part of research. Gramsci stated, in his article *why be critical* (in Splichal, 2008:20), that “critical research (including theory) should be considered: integral research”, in the sense that it seeks not only to satisfy some given (existing) needs but also to create and

develop those needs, to progressively enlarge the population of its users, and to raise civic consciousness. CER and critical theory connect to or against politics, playing a role in changing people's ideologies and frames of mind relating to the dominating system, for example, oppressive or capitalist government, the apartheid regime, and current Islamic oppression of other religions on the African continent. Splichal (2008:20) stated that this inseparable connection to politics focused on contradictions and conflicts in contemporary societies which are often rooted in the alienating conditions of individuals and groups. Such an integral form of critical communication research is emancipatory because it strives to explain how the historical processes of alienation and subordination are reproduced. Social groups and individuals have the authority and power of action and communication to make changes in their communities, and those who are alienated can be empowered through community action or collective action.

2.3. CER AND EDUCATIONAL RESEARCH

For Mack (2011:5-6) educational research can be traced back to the three paradigms of research, positivist, interpretivist and critical. How one views the constructs of social reality and knowledge affects how they will go about uncovering knowledge of relationships among phenomena and social behaviour and how they evaluate their research. The purpose of positivistic research is to prove or disprove a hypothesis, whilst other characteristics of positivism include an emphasis on the scientific method, statistical analysis and generalizable findings. Three positivistic ontological stances, according to Mack (2010:7) firstly, reality is external to the researched and represented by objects in space; secondly, objects have meaning independently of any consciousness of them; and thirdly, reality can be captured by the senses and predicted. Societies have different operating patterns which are only known by the community of interest and with which researchers have to familiarize themselves. The students do know the problems or issues of concern to engage with the community under study, whether uncovering social realities or knowing best their ecology as good facilitators of critical research and implementation of RBL in sustainable learning ecologies in higher education. In this study it was generated by

the participants themselves rather than the researcher, and their views were taken into account as they were the part of the research, having taken an active part in it.

Mack (2010:7) wrote that, the interpretivism paradigm can be called anti positivist paradigm because it was developed as a reaction to positivism”, adding that it was heavily influenced by hermeneutics and phenomenology. The main tenet is that research cannot be observed from the outside but rather it must be observed from inside, through the direct experience of the people. This is valid when considering critical research and CER as they propagate collectiveness and the researcher being part of the researched. Ontological assumptions made by Mack (2010:8), were, firstly, that reality is indirectly constructed, based on individual interpretation, and is subjective; secondly, people interpret and make their own meaning of events; thirdly, events are distinctive and cannot be generalized; fourthly, there are multiple perspectives on one incident; and fifthly, causation in social sciences is determined by interpreted meaning and symbols.

Speaking of the Education First Initiative (September 2012), the UN Secretary General Ban Kin-moon highlighted the connection between education and development:

The education first initiative recognizes education, through the document as a major driver of change to achieve environmental sustainability, sustainable living, gender equality, economic opportunity, health and in inculcating a sense of been a responsible global citizen (Sarabhai, 2013:1).

From the above it can be deduced that education is valued and seen as a driver to creating learning ecologies. However, Papastephanou (2014:183) mentioned that educational values must be judged on how they relate to emancipation and images of human perfectibility (in need of public interrogation) and the way in which they can be connected to context, transcending critique and philosophy.

According to Mack (2010:9) within the critical research paradigm the critical researcher aims not only to understand or give an account of behaviours of societies but also to change them. Schools play an explicit part in this construction of knowledge power in society, and education serves the interests of those who have power, usually wealthy white males. For Stahl (2006:87) critical research has its

roots in the Marxist critique of capitalism and is based on the perception that the current status quo is unjust. Critical research aims to emancipate those who are alienated because of current structure of society and production, and those who are excluded from the discourses that shape our society. The collectiveness of society and the students should be taken into account as one of the principles and assumptions of CER. Changing the ethos of higher education would not require wholesale transformation of the values that guide higher education, but would require higher education to order its priorities, correcting the current inversion of values by making civic responsibilities a higher priority than the economic ones.

Paulo Freire's view, according to Schenck, Nel and Louw (2010:74), it was that transformation is based on the hope that it is possible to change life for the better. Again, it was also based on the vision of a new, more just society in which the values of co-operation, justice, and the common good are operative. It is on this assumption that Marxists criticise capitalism and suppression of people, therefore, collective action of the people can bring about change, intent upon changing the status quo of the suppressor. In this study collective action as proposed by CER and RBL can bring about change in higher education and create sustainable learning ecologies. This change is in the way teaching and learning is occurring, and in the mind-set of lecturers and students. It is a shift from authoritarian teaching to a more democratic and emancipatory approach, equal to all individuals. New and modern learning tools and resources, for example new technologies and pedagogical approaches, are used to facilitate effective and quality education in higher education.

Mack (2010:9) argued that educational research in the critical paradigm should challenge the reproduction of inequalities and people must challenge discourses. The CER posits that change should occur in what the community sees as invasion or oppression. This type of research has an agenda, to change the participants' lives or the structure of the institution, with the following ontological assumptions:

- Social reality is defined from persons in society
- Social reality is socially constructed through media, institutions and society.
- Social behaviour is the outcome of "particular illegitimate, dormitory and repressive factors, illegitimate in the sense that they do operate in general

interest – one person's group's freedom and power is bought at the price of another's freedom and power" (Cohen et al., 2007:26, in Mack, 2010:10).

Whilst Stahl (2006:87) states that the critical intention to change reality and emancipate people leads critical researchers towards the choice of certain topics, these are ones which promise the researcher to identify issues of suppression and alienation and allow them to make a difference. In this case, Foucault's discourse, according to Stahl (2006:88), shapes social reality and individual perception. Splichal (2008:20) stated that critical research, including theory, should be considered "integral research" in the sense that it seeks not only to satisfy some given (existing) needs but also to create and develop those needs, to progressively enlarge the population of its users, and to raise civic consciousness: "A central element of a critical theory is its reflexivity; it always includes an account of itself and of its own historical preconditions and assumptions" (Splichal, 2008:21). Mostly in CER and in critical theory the community under study define their problems and come up with their own solution to them.

The important feature of critical theory is that it aims to emancipate and enlighten the students as equal partners in the learning process. Critical research and critical theory aims to empower the people.

2.4. CER AND HIGHER EDUCATION RESEARCH

CER as the research approach is now taken into consideration as a research paradigm and 'reform' (Wilkin 2014:186). Oliver (2002:14) posits that a new epistemology for research praxis is necessary, which must reject the discourse that sustains the investigatory research and replace it with a discourse that suggests that research produces the world. This however is vital as the rising epistemology will challenge the authority of the researcher as the dominant character in the research processes and highlight the plight of the marginalized sector of society. In their article, "Exploring types of action research: implications for research validity" Newton and Burgess (2008:21) explained three modes of educational action research, explanatory, interpretative and critical, by stating that each is influenced by a corresponding philosophical position and logic: "explanatory research is heavily

influence by the positivist tradition in the philosophy of science”, whilst interpretive research is fundamentally concerned with discovering meaning within a social phenomenon, and critical research is concerned with affecting political, social, or personal change.

Mcmillin and Dyball (2009:56) wrote that institutions of higher education play a significant role in the search for a more sustainable future. In recent years, higher education institutions have given increasing consideration to sustainability in the realms of campus operations, curriculum and academic research. Divecha and Brown (2013:197) are concerned that “we are not embracing change toward sustainability fast enough, and our rate of change is too slow in the face of complex global challenges”. A UNESCO (2009:5) document stated that providing higher education to all sectors of a nation’s population means confronting social inequalities deeply rooted in history, culture and economic structures that influence an individual’s ability to compete. Cortese (2003:17) believed that higher education institutions bear a profound moral responsibility to increase the awareness, knowledge, skills and values needed to create a just and sustainable future.

Through educational research, Aina (2010:23) argued, higher education contributes to the formation and deployment of human capital, the cultural and social construction of values and meaning, and the capacity for individual and collective emancipation from ignorance and domination. They further postulated that it provides people with the tools and capacities for their collective and individual self-definition and empowerment, and for interpreting their relationships to themselves, to others, and to nature and their material and other environments. Ellis and Goodyear (2010:108) argued that university and higher education can be understood by using the four characteristics of the ecology of the university:

- *Ecological balance*: the best way of thinking about a university being in ecological balance is when it is permeated by successful learning. Learning is a common goal for students, who seek to understand the world in new ways; teachers, who seek to help students understand the world in new ways and who seek a better understanding of how to do this; researchers, who seek to discover the ways of seeing the world; leaders, who seek to understand, interpret and respond to rapid changes going on the world; and

society, which looks to universities to facilitate a better understanding of the phenomenon.

However it is understandable that the world educational systems are changing and that this has to be understood by both the teacher and the learner. The whole environmental scenarios had to be taken into consideration in offering quality education.

- *Ecological self-awareness*: required for an institution to maintain its balance. This is the principle by which participants in the ecology are aware of their place and function in relation to the rest of the environment. Awareness of place and function presupposes the existence of mutually shared agreement on what constitute balance.

The learning environment which is ecology for learning is crucial as it encompasses society and the surroundings. This automatically helps the researchers and students to understand the wholeness of educational systems.

- *Feedback loops*: enable the participants in an institution to help maintain its ecological balance. Participants required a reliable stream of timely, valid, action-oriented information for them to be aware that their roles are playing out within the whole ecology. Feedback loops can help participants to be self-regulating and to manage uncertainty in the environment.

In each process, success is measured by output rates and methods of assessments. For the changes to be made quickly, student feedback is necessary regardless of whether it is positive or negative. This would help the students and lecturers to come up with alternative mechanisms to assist learners, either with available resources or technological resources.

- *Self-correction*: by the parts of the system can be achieved through alignment to the ecological balance identified by the university.

The university has the responsibility to see that its customers are taken care of, with provision for qualified lecturers and the right calibre of students, including adequate resources.

Higher education is the hub around which creation of knowledge and the societal future of a sustainable project should revolve. The freedom or independence of HE and its clients (students) should be given to nourish the idea and ideologies that would critically question and plan for the future sustainability in the learning environment. In South Africa the National Council of Higher Education notes that Higher education is the repository of advanced knowledge: research creates it, scholarship preserves, refines and modifies it, teaching disseminates it and professional services use it in developing a wider community.

After the transition (1994) of South Africa from white rule to universal suffrage, international sanctions were lifted and the country became a more active participant in the international community, and the education sector had to align itself to international standards, within a context of globalization.

2.4.1 Impact of Globalization

It has been argued that “students need to learn to approach problems from a global, systematic perspective, but they also need to look at how their own lifestyles might promote or inhibit solutions” (Rachelson, 2014:4), and that “Globalisation, a key reality in the 21st century, has already positively profoundly influence higher education” (UNESCO, 2009:2). According to the document compiled by UNESCO (2009:2) universities have long been affected by international trends and to a degree operated within a broader international community of academic institutions, scholars, and research, the rise of English language, and other forces beyond the control of academic institutions. For some, the impact of globalization on higher education offers exciting new opportunities for study and research no longer limited by national boundaries, for others the trend represents an assault on national culture and autonomy (UNESCO, 2009:3; Shaapera, 2015, 36; Evans & Nation, 2007, 650). Providing higher education to all sectors of a nation’s population means confronting social inequalities deeply rooted in history, culture and economic structures that influence an individual’s ability to compete. Geography, unequal distribution of wealth and resources all contribute to the disadvantage of certain population groups, freedom and liberty in civil society.

Reunamo and Pipere (2012:314) believe that education for sustainable development has been noted as helping people develop the attitudes, skills, perspectives and knowledge to make informed decisions and to act upon them for the benefit of themselves and others, now and in the future, though measures to put in place the accessibility of education and to the previously disadvantaged are being established in some countries around the world. This is the propagation of CER principles on equality for all, democracy and emancipation for the people. A number of governments have put measures in place to increase access to higher education, for instance, Mexico has invested in the development of additional services in disadvantaged areas with some success, as 90% of students enrolled as first in their families to pursue higher education, 40% from economically depressed areas (UNESCO, 2009:3-4). Initiatives in Ghana, Kenya, Uganda and United Republic of Tanzania have lowered admission cut-offs for women to increase enrolment, whilst the Indian government obliges universities to reserve a set of spaces for “socially and backward classes”. Of significance is the Global Citizenship Project (GCP), which was implemented in July 2008, at the Ashlawn Elementary School in Virginia USA, around principles of CER and critical theory for the restoration of equity, social justice and freedom of students to actively select, map out and take decisions regarding their learning.

Miranda (2010:222) and Sharples, Corlett and Westmancott (2002:220) named four components similar to the assumptions of RBL and CER as relevant to education that students are allowed to plan and manage their project with the learning resources at their disposal:

Component 1: Diversity: develop and foster respect and care for cultures around the world and within the school community

Building on the assumption that the world is a ‘global village’, this main aim is to expose children to different cultures, internationally and in the local community.

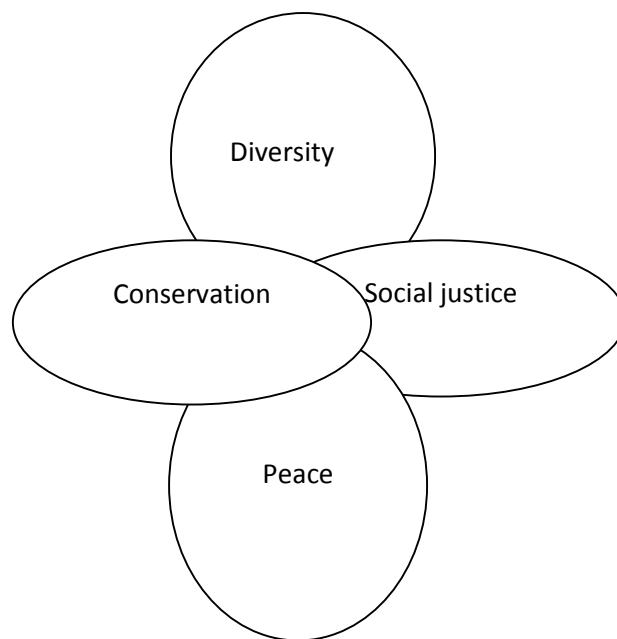


FIGURE 2.1: Components of global citizenship Adapted from (Miranda, 2010:223)

Component 2: Conservation: develop and foster respect and care for the earth's ecological systems

Under this component, only Ashlawn students will take action to protect and restore the integrity of ecological systems, adopt patterns of production and consumption to safeguard the environment and learn new information regarding ecological sustainability.

Component 3: Social justice: develop and foster respect and care for human and economic development that is equitable and sustainable.

This component explores the principle of equity and equality in terms of economics, gender and racial/ethnic diversity. Activities under this component provide students with experiences that help them better understand the role they can play in eradicating poverty, ensuring gender equity, upholding the rights of all without discrimination and promoting a natural and social environment supportive of human dignity.

Component 4: develop and foster leadership skills to promote democracy, non-violence and peace.

This component empowers students to be active participants in decision-making processes and to make educated choices. They will actively help select and create activities which provide them with opportunities to take on leadership positions and

democratic principles, and to promote a culture of tolerance, non-violence and peace.

I will examine how the abovementioned components relate well to the principles of RBL and CER, such as equality, social justice and emancipation of students in relation to their learning ecologies. RBL promotes peace, diversity conservation and social justice, all of which facilitate its effective use in creating sustainable learning ecologies in higher education. The learning pattern should be complementary, such that the students and the university work towards a common goal. Sustainable learning ecologies can flourish under the democratic processes, in which all stakeholders have a voice.

2.4.2. Sustainability and Higher education

Universities are vital instruments in which developments are strategized and future, durable implementation of ecological development occur. Universities cannot operate in isolation in building sustainable developmental programmes and creating sustainable learning ecologies (Mcmillin & Dyball, 2009:56; McCowan, 2006, 57; Barron, 2006:196), but can optimize their role as agents of change for sustainable future by adopting a holistic approach to sustainability. If people are not encouraged to be critical they will accept injustices and not work together to overthrow oppression and transform society. This approach explicitly links the research, educational and operational activities of an institution and, importantly, engages students in each, rather than confining their education solely to the classroom.

In other words universities are capable of creating RBL for the learning ecologies which are sustainable. The whole approach includes the communities where the student comes from. It really propagates the fact that learning is not class bound, but learning is diverse and multifaceted.

According to the Green Paper on Higher Education Transformation (1996:3) higher education has several related purposes:

- To meet the learning needs and aspirations of individuals through the development of their intellectual abilities and aptitudes. It equips individuals

to make the best of their talents and of the opportunities offered by society for self-fulfilment and is thus a key allocator of life chances.

- To supply the labour market, in a knowledge-driven and knowledge-dependent society, with high-level competencies and expertise necessary for the growth and prosperity of a modern economy. It teaches and trains people to fulfil specialized social functions, enter the learned professions, or pursue vocations in administration, trade, industry and the arts
- It is responsible for the socialization of enlightened, responsible and constructively critical citizens. Citizenship of this nature presupposes a commitment to the common good, implying a reflective capacity and willingness to review and renew prevailing ideas, policies and practices
- It is directly engaged in the creation, transmission and evaluation of knowledge, its purpose being to ensure continued pursuit of academic scholarship and intellectual inquiry in all fields of human understanding, through research and teaching.

According to Hales (2008:23) there are four fundamental dilemmas which are essential moral choices: firstly, alleviating poverty, secondly, removing the gap between the rich and poor, thirdly, controlling the use of violence for political ends, and fourthly, changing patterns of production and consumption and achieving the transition to sustainability. Based upon these, institutions of education are essential to actively challenge the forces that threaten both human and natural systems so future leaders and innovators are taught in them. Marx proposed equality among the people, through equal economical distribution of resources and the dismantling of capitalism at all levels. Emancipation as the key concept in this study is the frame of reference to CER and RBL, as the main purpose of this concept is the usability in eradicating poverty and inequality. As such, the relationship between sustainability and higher education has received attention from various researchers (Mcmillin & Dyball, 2009:55; Hales, 2008:23; Butler, 2007:604) leading to the main question of what role higher education and its institutions can play in restoration and provision of sustainable learning and education.

2.4.3. Sustainability and sustainable development

According to Henry (2009:131) many scholars recognized the need for institutions that promote learning in the face of complex and uncertain problems”, so it is necessary that new approaches be taken, such as RBL, project-based learning, and blended learning. Other authors (Kates et al., 2001; Clark, 2007, in Henry, 2009:131) believed the emerging field of sustainability science would provide a fresh perspective on learning because of its focus on several major learning challenges in environmental policy and sustainable development.

In this study, the concepts ‘environment’ and ‘ecology’ are used interchangeably, as the main focus in the learning ecology of the students in higher education. My own view of learning is that learning has interacting components, which include: (1) social learning, (2) personal learning, (3) communal learning, (4) inter-intra learning, (5) global learning, and (6) environmental learning. Observations on sustainable learning ecologies show it to be composed of different pattern that interact to form a system which consists of elements that are progressive or developmental in nature.

This study intends to create and highlight the creation of sustainable learning ecologies using modern technology and methodologies, however, these concepts are vital in securing change in higher education, transformation, change, sustainability and democracy. For them to materialize and be applied practically, theoretical alienation and praxis should be used. Moore (2005:79) found that many academics argue that knowledge production and the consequent transfer of knowledge from experts to layperson (or professors to students) is a significant role of the university.

2.5. USING CER AS A THEORETICAL FRAMEWORK

According to Anderson (2011:33) the task of critical theory, involves a form of reflective social science that was able to provide an account of its own origins”, however, the guiding concern of the original Frankfurt school was with emancipation through reflective social science, as a matter of articulating the structures of consciousness underlying the experience of the working class in particular. Though

the Frankfurt school used qualitative methods in their approaches they required specific tools to generate results and analysis. CER was chosen in this study because it was considered as a credible scientific research tool. Using both qualitative and quantitative methods, the researcher was guided by the purpose, aims, objectives and questions of the study, and because the researched and the researcher were on an equal footing. Data was not gathered but generated by the researched and the researcher, which gave each party freedom of action and expression.

Importantly, CER as a tool was regarded as having the potential to bring about social change, emancipation, empowerment of the marginalized and oppressed sector of the population. As a tool it was used to critique, challenge, transform and empower the students in higher learning ecologies, emancipating them from the instructional and authoritative pedagogies used by the teachers in higher education ecologies. In higher education the teacher had to listen to the students in a form of reciprocity and reflectiveness of both participants. In relation to the CER researcher and the learning ecologies, Nkoane (2012:101) argued that to gain understanding and meaning-making in CER one should listen to the words and use text as a basis for understanding discourse and creating new meanings.

2.6. MAJOR SCHOLARS IN CER AND CRITICAL RESEARCH

The critical rationalism of **Karl Popper** is probably the most widely respected model of the logic of research. According to Ulrich (2006:3) it offers a sound critical response to the logic of positivism, and in particular seeks to lead one beyond positivist research practice by replacing the method of 'verification' and empirical validation of hypothesis, based on systematic observation and inductive reasoning, with the method of 'falsification', a process of empirical elimination of hypothesis based on systemic testing and deductive reasoning. Unlike the philosopher John Lock, for whom a child was born as a tabula rasa with no ideas or feelings, Popper purported that students in their learning ecologies are rational and have logic and the ability to reason. RBL, in an educational setting, posits that if students in their learning ecologies can be given a space, time and allowance to select and use their ideas, they are capable.

The research of **Kurt Lewin** aimed to develop 'democratic forms of organization' and cultures (Andersen & Bildfeldt, 2012:3-4). The human experience with authoritative systems made democracy a concept which Lewin believed should not be taken for granted but learned. Husted and Tofteng (2007) stated that Lewin was, in his early years, concerned to develop society in a democratic way and use action research and empowerment strategy for minority groups and critiques of authoritarian structures. Lewin was inspired by critical theorists such as Horkheimer and Adorno (the Frankfurt school), who argue, in opposition to traditional, particularly positivists social science, that "what is" should be understood in the light of a "classical utopian idea of an un-reified society articulated in the Philosophy of the Enlightened" (Andersen & Bilfeldt (2012:4). Lewin's view is more related to the perception of CER and RBL as they propagate freedom. Students should be free to demonstrate their abilities in their learning ecologies and rather than being suppressed should be given "*uhuru*", meaning freedom or independence in Swahili.

Anderson (2011:35) stated that the empirical projects on which **Jurgen Habermas** worked during his early years has defined much of his reputation, the critical potential of the social movements, the threat of public discussion being instrumentalized by the media, and the Marxian idea that guaranteeing material welfare is a precondition for social justice: "Habermas was geared more towards the possibilities of democratic politics and towards the simultaneously theoretical and emancipator task of revealing the distortions of contemporary politics, and this led to clashes with Horheim" (Anderson, 2011:35). Whereas the first generation of the Frankfurt school had looked to various forms of economic, political, cultural, psychoanalytic 'crisis' as sites of emancipatory impulses, Habermas focused on ordinary life, specifically in the pragmatics of coming to an understanding with someone about something to serve as the key source of emancipatory impulses.

Carr and Kemmis (1986:135) stated that Habermas contended that human knowledge is constituted by virtue of three knowledge-constitutive interest which he labels the 'technical', the 'practical', and the 'emancipatory'. Each of these takes form in a particular means of social organization or 'medium', and leads to a different science The end results of Habermas's analysis is therefore a three-tiered model of 'interest', 'knowledge', 'media', and science, which can be represented diagrammatically in the following way:

Table 2.1: Three tiered model (Adapted from Carr & Kemmis, 1986:136)

<u>Interest</u>	<u>Knowledge</u>	<u>Medium</u>	<u>Science</u>
Technical	Instrumental (casual explanation)	Work	Empirical-analytical natural sciences
Practical	(Practical) understanding	Language	Hermeneutics or 'interpretive' science
Emancipatory	Emancipatory (Reflection)	Power	Critical science

In Habermas's view, communication is vital, as is individualism and human knowledge. The individual has abilities and knowledge which is instrumental, understanding and emancipatory, occurring within the boundaries of social organizations. In RBL the teacher had power which in critical theory or science is authoritative. Students through the process of reflection can have freedom from the oppressive.

Habermas, as the director of the Frankfurt school, was followed by **Axel Honneth**, who according to Anderson (2011:47) was working on three theoretical fronts. First, was the continual mining of the tradition of modern Western philosophy for resources for critical theory, from Hegel to Adorno, and Levi-Straus to Castoriadis. Second, there was theoretical engagement with qualitative social science research, and third a development of critical theory per se. Of the normative issues and, specifically in working out the details of his theory of recognition, Honneth maintained that an account was needed of the social that emphasizes how society reproduces itself through the often conflictive interaction of real social groups, which are themselves the products of continuing activities of interpretation and struggle on the part of participants. Social groups represent the driving force of historical development and are essential conditions of human flourishing. Honneth pointed out inchoate feelings at the margins of traditions, and more generally an encounter with the conflicted and unresolved needed innovative resources for critical theory. He made room in his critical theory for the voices that had been silenced and marginalized as the "Other" of reason, while retaining his commitment to the Enlightenment heritage of emancipatory reason.

The views of all these members of the Frankfurt School made serious contributions to the formation of CER, and its practices, assumptions and applications. In relation to this study they also contributed to a structured theoretical framework of CER. Whilst Habermas's focus was on individual capacity for freedom and self-determination, Honneth brought in the concept of "Other", which refers not only on structural focus of society and how society function, but how others excerpt individualism function in the system. This concept "Other" might include your neighbour, schoolmates and other people in your community. In relation to this study the teacher had to recognize the existent and capabilities of students in their learning ecologies and as active role players in structuring the policies that govern them, in terms of political and economic structures in the community. The concept "Other" in the school or higher education can include different races and ethnic groups which will facilitate diversity, helping to bring about a cohesive and collective body to change the rigid or conservative structures of society. Stereotypical views of others can be tackled.

In relation to this study, Honneth's focus on critical theory does not ignore the question of social science research but rather emphasises the importance of society in individual endeavours. He propagates the collective action and importance of social systems such that others, in this study the students, can bring about change and transformation in higher education. Then this can be interpreted by saying collectiveness of all the structures of society can overcome societal division and diversity, which is the main assumption of CER and RBL.

Schenck et al. (2010:70) found **Paulo Freire** to be critical and reflective, examining accepted assumptions that maintain a particular oppressive situation whilst exposing oppression and promoting liberation:

Freire emphasized that people can be believed in and trusted, this start with the process of dialogue and conscientisation through which new forms of knowledge and reality and power relationships can develop to challenge oppressive conditions and power structures (Schenck et al., 2010:74).

Freire's views are critical from the point of view of his epistemological beliefs, as co-researchers in this study were given freedom to express their views. Being given equal rights meant students had to be guided through different patterns of social

structures, however, they had to be trusted because they were capable of solving problems in their ecologies. Sustainability can be properly managed by its own inhabitants, because they know the problems that exist in their environment.

Freire raised the question of the poor against the authoritative, and if teachers are critical and exercise reflectivity the students in higher education can expose the dominating or oppressive methodologies in the learning environment. Also, as in RBL and CER, the 'humanity' of students is taken into account. Through the process of dialogue or communication the oppressive sector in education can be challenged, whilst acknowledgement of new forms of knowledge can be formed through new teaching and learning methods, as well as through the practicality of issues of society.

In reflecting upon the abovementioned role-players in CER, they emphasized the role of qualitative research and influence rather than embracing only qualitative methods, such that 'integral research' (Splichal, 2008:20) should be taken into account rather than 'conventional research'. They emphasized human existence, experiences, logic and reasoning as critical instruments in social research. However, one cannot ignore the social and structures, or communication patterns that prevail amongst civic societies. Political discourses and cultural discourses are taken into consideration and from the inception of the Frankfurt school the idea was to promote humanity, equal justice for all and democracy. These role-players proposed the idea of a free society in which people could be emancipated from oppression.

That the resources of the country should be equally distributed amongst society, in a democratic way, is relevant to gender inequalities in educational systems. Role-players in CER critique the status quo and include empirical discourses into considerations. People are taking an active not passive role in their development, either be political or cultural developments. One can argue that people are capable of managing their ecologies so students can engage in activities given the opportunities. RBL and CER can also facilitate interaction between the lecturer and students as well with their communities, and so be used to create sustainable learning ecologies in higher education.

2.7. CER AND THE LEARNING ECOLOGY FRAMEWORK

According to Solomon (2000:4) some people believe that learning occurs in the head while others feel that it is an external behaviour that must be observed. Henry (2009:131), however, believed that 'learning' refers to the process by which actors assimilate information and update their cognitions and behaviour accordingly. According to Normak, Pata and Kaipainen (2012:262) learning takes place in a dynamically evolving space that is formed not only by the individual learner but also to a great extent by the wider community of learners and teachers. For Capra (1998:3), one should understand how the ecological communities of nature, the ecosystems, organize themselves so as to maximize their sustainability. He added that to build a sustainable society for future generation, the great challenge is to fundamentally redesign many technologies and social institutions so as to bridge the gap between human design and the ecologically sustainable systems of nature.

Barron (2006:199) wrote that in learning adolescent are simultaneously involved in many settings and that they are active in creating a context for themselves within and across settings. According to Hodgson and Spours (2009:9) the ecological perspective is closely allied to a number of established theories and forms of holistic thinking that may offer a new 'language' to conceptualize change and stasis in a variety of environments, contexts and spaces of activity. These exist in linked scales or levels, ranging from the global to the local, from the micro to the macro.

From the above it can be deduced that the school as the macro system in which the activity takes place is also a tool of learning, and that the structures shall be favourable or not in producing effective learning. Students are not in isolation but part of larger systems, and so contribute to the environment with which they are familiar with. However, Barron (2006:196) states that the learning ecology framework draws on ecological perspectives as well as constructs developed from sociocultural and activity theory. Universities or schools as the learning place have their own culture and traditions that are encompassed by the surrounding communities, therefore CER in this study is appropriate as the macro systems of the researched are also a focus of contribution. The ecological approach proposed by Normak, Pata and Kaipainen (2012:262) is that learning takes place in a dynamically evolving learning space that is formed not only by the individual learner

but also to a great extent the wider community of learners and teachers. This view supports the idea of an holistic approach to educational research.

Supporting the ideas of collaboration in teaching and learning, Ellis and Goodyear (2010:118) found that teaching in modern universities was difficult to sustain as a solo activity, conducted by a lone academic. Co-teaching is becoming more common, but even when teachers manage their own individual courses the need to work in a team arises in a number of situations, for example, clarifying assessment standards, planning programmes so that they are coherent to students, or mapping graduate attributes across a curriculum. Hodgson and Spours (2009:11) posit that ecological perspectives also point to areas of action, in particular the development of new forms of collaboration, whether professional or institutional, to create space for local deliberation of innovation and capacity building.

On the other hand, Jackson (2013:10) noted that a traditional factor of university courses is creating an ecology for learning that is designed, organized and implemented by a team of academics who have both disciplinary and pedagogic expertise, working within an institutional environment has good support and ample resources to aid learning. There is a structure which is determined by the designers with objective, content, resources and processes that engage learners in activities through which they learn and some of their learning is assessed.

Patterson et al. (2009:142) stated that individuals within a teaching/learning ecology cannot be considered in isolation from its ecological system, and that surrounding social cultural group dynamics and histories make significant contributions to emerging patterns in the system, although teachers and researchers can focus on particular individuals and groups for a time. Ambrose, Lovett, Pietro, and Norman (2010:3) listed three critical components of learning:

- I. Learning is a process, not a product, and takes place in the mind so one can infer that it has occurred from students' products or performances
- II. Learning involves change in knowledge, beliefs, behaviours, or attitudes, unfolding over time. It is not fleeting but rather has a lasting impact on how students think and learn.

- III. Learning is not something *done* to students, but rather something students *do*. It is the direct results of how students interpret and respond to their experiences, consciously and unconsciously, past and present.

The idea of ecology of learning or learning ecology, according to Ellis and Goodyear (2010:108) can enable useful strategies to be put in place to manage the uncertainties faced by individual universities and the sector as a whole. Ecological thinking can help identify structures and processes that are geared to dealing with change. Hodgson and Sours (2009:9) stated that in recent years ecological perspectives had been applied to a variety of areas as ways of thinking about child development and inclusion, notably the processes of business innovation and skill development, communication and information systems, learning relationships, professional practice, education policy development and governance processes of evolution, resilience, sustainability and change.

According to some authors (Hugh-Jones & Madil, 2008, 26; Jackson, 2013:10) the activities in a learning ecology are explicitly dedicated to learning, depending on the underlying philosophy. Learning ecologies may be tightly controlled in terms of what is learned, how and when, and activity may be oriented towards transmission, guided discovery or self-directed learning, with approaches that encourage independence or collaboration, or any blend of these. A learner's experience has to be viewed comprehensively and holistically in order to understand the nature of the learning ecologies he or she develops.

2.8. HISTORICAL BACKGROUND OF CER

Kates, Parris and Leiserowitz (2005:10) listed four key themes as having emerged from the collective concerns of the global population in the last half of the twentieth century, namely, peace, freedom, development and environment. Peace was thought to have been secured in the aftermath of the Second World War (1939-1945), but was immediately threatened by a nuclear arms race and freedom struggles against imperialism and totalitarian oppression, and later to extend democratic governance, human rights, equality for women, recognition of indigenous peoples and minorities.

According to Carr and Kemmis (1986:136) 'critical social science' serves the 'emancipatory' interest in freedom and rational autonomy, requiring transcendence of any narrow concern with subjective meanings in order to acquire knowledge of the objective framework within which communication and social action occur. The historical origins of CER can be traced back to critical theory as proposed by the Frankfurt school, "... which acquired its name because of it being founded as a movement attached to the Frankfurt university [and] was at first known as the Institute for Social Science" (Sudersan, 1998:254). Critical theory arose as a result of the upheavals in the mid-twentieth century, its avowed task being to interpret the scenario which unfolded as a result of the World Wars, in which Germany was the main aggressor. The Frankfurt school theorists were appalled by the failure of Marxism to usher in a new dispensation in which workers and the oppressed were expected to participate, and the alarming rise of Nazism and Fascism.

Boog (2003:427) wrote that emancipation was the main goal of large groups during the eighteenth, nineteenth and twentieth centuries, as they struggled for equal rights and social justice, notably in the socio-economic, cultural, ethnic, religious, gender and sexual orientation fields. Although one could be emancipated as an individual, the concept applied to the collective. Sudersan (1998:254) reported that the Frankfurt school theorists were shocked at the surge in authoritarian and totalitarian tendencies and increasing dominance of science over other disciplines. Anderson (2011:31) one of their missions or intentions was to bring about emancipation from ideology by improving awareness of material conditions.

(Sudersan, 1998:254-255 & Pethebridge, 2011:31) stated that the Frankfurt school viewed social problems as affecting all strata of society. They attributed the chaos and turmoil in the aftermath of the two World Wars to a systemic malady endemic to all closed systems of thought, and strove to counter misconceptions and misinterpretations of reason that resulted from domination and rigid systematization in the name of science and technology. Domination over nature was confused with the freedom from subjective and inter-subjective factors that blocked the progress towards a society in which freedom, justice, and happiness were expected to reign. The socially poor or marginalized were to be empowered to achieve the equality with the rich or the dominant sector of the population.

For Boog (2003:428) an objective of CER and critical theory was to help the dispossessed gain power, with the dominant labour classless becoming the historical subjects of a new fully democratized classless society. Sudersan (1998:256) noted that the Frankfurt school theorists were insistent upon the renunciation of a closed approach to the social sciences and sought sufficient space for tension and contradictions characteristic of society. The following differences between the traditional theory and critical theory were provided by Sudersan (1998:256) in his article on Habermas and critical theory:

Traditional theory

- A closed system of statements constructed according to logical rules deduction and induction
- Supposedly value-neutral
- Objective and modelled on the lines of natural rationality
- Characterized by technical-instrumental rationality.

Critical theory

- Posits that there is no absolute subject of knowledge and that the subject and object lie in the future due not merely to intellectual progress but also to the social progress in which the relationship between them is redefined
- The method of science is different because the ends determine the means in their case, whereas in the case of critical theory the means are equally important as the ends.
- The method of abduction is employed
- The importance of praxis and responses, with faith in the cherished enlightenment of ideals of freedom, justice and happiness.

In CER, the public had the power of communication and action, which according to Splichal (2008:25) represents the heart of the concept as a product of the Enlightenment, and since its first appearances it had a clearly critical orientation directed against the social and political structures of the traditional, pre-modern, pre-bourgeois society and hereditary authoritarian power.

On the other hand, the positivistic and interpretivistic methods in providing a clearer and objective perspective about social sciences exclude human experiences and ecologies. In the case of this study, neither reductionism nor positivism were used as they would not help to achieve the purpose and aims. CER was relevant in the learning ecological context as student experiences and views were taken into account. As Carr and Kemmis (1986:135) argued, any reduction of social sciences to recognize the subjective meanings that characterize social life are themselves conditioned by an objective context that limits both the scope of individual indentations and possibility of their realization. Students, as members of the community, had a critical role to play in their education and how learning should take place. Social class that exists but in order to promote equality and freedom of the people there should be equal justice for all, and hence quality education.

2.9. RESOURCE-BASED LEARNING

From the statement by O'Jenkins (2006:32) that "Undergraduate students are subject to increasing learning pressures relating to the amount, level and variety of reading research they are required to undertake in relation to taught sessions and assignments", it is clear that new approaches or methods of teaching undergraduates effectively are needed. In this study the focus was on RBL as an approach to facilitated learning in creating sustainable learning ecologies, in which students should not be under any pressure to learn or execute their academic activities.

Rowntree (1999:1) recorded that over the previous decades material-based learning had become a growth area in higher education, in UK and around the world, whether in the form of open learning, distance learning, resource-based learning, flexible learning, and technology based-learning. It was adopted in primary classrooms and this new knowledge informed and helped teachers implement new teaching strategies that could enhance learning and raise achievement through changed school and classroom practice by universities and colleges. It was their only means of safeguarding high quality education in the face of a greatly enlarged student body unaccompanied by a commensurate increase in staffing and other resources.

In their study of teaching and learning research initiatives, Hill, Robertson, Allan Bakker, Connely, Grimes, Murrphy and Sutton (2006:2) intended to add to existing knowledge of teaching and learning. Hill and Hannafin (2001:37) stated that during recent years the role of educational resources has undergone a metamorphosis whilst Hay and Marais (2004:65) noted that RBL had been utilized for all the courses of a Career Preparation Programme (CPP) offered at the University of the Free State in South Africa. In the RBL, less emphasis is placed on the presentation of lectures and more on well-developed self-study material (self-instruction packages) with the accompanying tutorial support from the co-coordinators and the facilitators.

Hill and Hannafin (2001:38) wrote that while the concept of RBL was not new, pre-digital environments have been constrained by how resources were created and distributed, whilst existing resources might be consistent with the needs and goals of designer, teachers, and learners, and can be used largely intact. In creation of sustainable learning ecologies learners had to engage and select their learning tools, on form the angle or context of the module offered. From the traditional teaching methods, teachers were in authority while students were at the receiving end. This study intended to shift the old mentality and teaching method to create what would be in future benefit the students and their communities.

From the Stone Age to the current 'information age', great changes have occurred, and the creation of sustainable learning ecologies in the current teaching, learning methods and technologies need to be refined to meet the current needs of humans. Learning can take place from different perspective and processes, but as some authors (Song & Hill, 2007:32; Tabara & Pahl-Wostl*, 2007; Nielson, 2009:6) state, that, depending on the learner's autonomy, the experience can range from an instructor lecturing 100% of the class time (no learner control) to a student taking charge of the learning process in an independent study experience (almost complete learner control,) which is a good step towards "participatory learning". Sustainable learning ecologies can help the quality education and produce students who are independent of any political ideologies, rather being the productive force of their communities.

Nielson (2009:3) found that considering sustainability as having both societal and personal implications for a way of life and life conduct might be clear, although they

could be put in different ways and point in different directions. The combination of sustainability with the demand of a renewal of democracy pinpoints the issue as a question of a societal renewal based on the possibility and will of ordinary people taking responsibility of common affairs, including the way of production and regulation, for instance protection. Hill (2001:38) stated that the potential of a resource-based learning environment for instruction and learning was considerable, whereas conventional approaches that address known learning goals using well-organized sequences, resources and activities, methods for supporting context-specific, user-centred learning have been slow to develop. One advantage of RBL in this study was that it could overcome the contested issue of diversity as students worked in groups and had a cohesive project activity that would require engagement from each participant.

Ciersky, Garmany and Hollingsworth (2009:5) in a resource-based learning school with emphasis on student-directed learning, found students could become self-sufficient, whilst libraries and data bases around the world could be accessed more rapidly. Students can access a wealth of information from a wide variety of sources, and can be guided and encouraged to ask productive questions to synthesise, analyse, interpret and evaluate information. However, as stated by Ciersky et al. (2009) the nature of resources has changed due to technological developments and the ability to catalogue and classify digital media. Armitas, Holt and Rice (2003:143) wrote that in recent years the Internet, video conferencing, computer-mediated communication and other information technologies had become powerful educational tools, widely used in tertiary education, and online learning environments that included elements such as multimedia materials, synchronous and asynchronous online discussion. Students who purchased a textbook for a course could also access a range of quality online resources as part of their learning experience.

Butler (2012:224) stated that using resources and hypothetical problems can provide instructors with the opportunity to engage students in dialogue about their professional responsibilities. One cannot build a house without resources, as is the case with learning. Resources provide power to execute whatever the work is facing the students and learners, and it is through the resources that the end product can be realized. Resources such as technological devices are crucial in the current

world, as students and researchers around the world can communicate within a short time. On the other hand, with the exception of technological contributions to RBL, human potential and abilities are important. When a project is given to the students it depends if it is individual work or a group work, but in most cases collaboration is usually at play in RBL ecologies, using a teamwork approach to a specific task.

Some authors (McLoughling, 2002, 149; Livingstone & Lynch, 2000:342) state that it is important for students to reflect and learn from their experiences of teamwork if they are to extract maximum value from the experience. In order for students to assess and place this in a positive framework it is important for tutors to provide them with a forum in which they can evaluate their experiences. RBL and CER encourage collectiveness and sharing of information to facilitate effective learning amongst the students. The effectiveness of group work as a learning structure is likely to be affected by the composition of the group but it is important that exercises include a reflective component to allow students to reconcile the individual contributions and interactions with the final group achievement. Only by empowering each student can they exert an influence on one or more components of the group work.

As indicated in chapter 1, the participants in the study are first-year psychology students, most of whom are from disadvantaged situations and environments, so they are on what the UFS called CPP to help them to cope with learning ecologies in higher education. The origin of CPP in UFS and its purpose is shortly outlined below by Hay and Marais (2004:59):

The CPP originated in the Bloemfontein region of the Free State in January 1993 as the need for Education and Elevation (NEED) Program. The necessity for the programme arose due to the above mentioned imbalances in the school system, which resulted in many deserving students not being able to meet the entrance requirements of universities, technikons, and vocational colleges. The primary aim of the CPP is to offer students the opportunity to enter general-formative and vocational-directed studies at various higher and further education institutions in the region. An equally important aim of the programme is that it addresses, through courses in skills

and competencies in lifelong learning, academic language, and numeracy the student wider needs with regard to quality of personal life, study, self-assertiveness, problem solving and other generic competencies and reading and writing skills. The CPP does therefore not only focus on the academic preparation of learners, but follows a holistic approach towards learner's development.

The majority of UFS courses offered in the first year are on CPP, with RBL being the mode of teaching, including an holistic model of systematic teaching. This form involves practical, videos, group work and reflective teaching. It helps to manage large classes and students and is independent from rigid teaching ecologies. Armatas, Holt and Rice (2004:143) noted the dual mode of teaching universities that offer courses to large numbers of students studying on and off campus feel pressure to relate to students, such as those that confronted Deaken University's first year psychology course. Armatas et al. (2004:143) stated that the way the content was delivered was changed to a flexible online supported RBL approach so that students had several avenues and multiple resources to assist with mastery of the subject matter.

It is evident therefore that RBL assumptions are in place, students are flexible and co-ordination and collaboration take place, as some learner's academic work includes group work. Also, the learning occurs within a space familiar with the students' experiences, with them working at their own pace and selecting their own material base resource. When the context is viewed in parallel with the way in which the community see their ecology, according to Hay and Marais (2004:65) RBL has been accepted as a teaching mode which uses printed materials, written, collated or signed by tutors and as a substitute for some aspect of teaching in the library. On the other hand, the RBL version, such as self-assessment, computer-based testing, peer tutoring and employment of graduate assistants are much more economical. Another valuable attribute of RBL is that, if applied correctly, it provides extensive support for learning activities to occur and in a time and space acceptable to the students.

Universities have changed in the calibre of student intake, inclusion and retention, acknowledging that learning is developmental and may be viewed in different

learning frameworks and epistemologies. The type of resources used in the learning environment also changes, so current learning is facilitated by various methods, theories and paradigms, within a context that is permeable. From this perspective it is important to use RBL as the new approach so as to give all participants in the learning process equal opportunity and time to explore their own subject matter and experiences.

The traditional learning ecologies and context in which the teacher was an authority and the student a blank recipient of information is not in line with RBL or CER as they embrace the creation and sustainable learning ecologies by giving the students freedom of expression. In their environment, learning is easily accessible to those who did not have privilege, a premise of Marxist theory, which regards the rich as dominating the poor with unequal distribution of resources. Critical theory questions domination and the notion of absolute truth as truth is not objective but skewed to one sector of the population.

RBL in relation to the South African context was examined by Lotz-Sisitka (2009:44) following achievement of democracy after nearly 300 years of colonial and apartheid rule. This was regarded as a life-changing moment for those who had struggled under a colonial imperialist yoke for a release from oppression and discrimination. She also highlighted that democracy promised political liberation and a new era of freedom from poverty and centuries of oppression and inequality. The utopian dream of new South Africa and its rainbow nation was under scrutiny after its first decade, as the weight of legacies and histories, for example, unequal access to resources and resource flows, poor quality education and discriminatory habits. This current study argues against discrimination, authoritarianism and the unequal distribution of resources, with critical theory analysis and CER guiding debate on the utopian concept in relation to creation of sustainable learning ecologies in higher education.

Within the South African context, RBL is feasible and is used by some universities such as UFS, but the challenges faced by both higher learning institutions, students and the government are inequality and a wide gap between the previously disadvantaged and advantaged institutions. There is a geographical challenge in the difference between urban and rural universities, how the policy is applied to

funding, lack of clarity in how the funding model is used by the government and political interference in education. Lack of computer training and computer studies make it difficult for students to access information and use technology as an RBL tool. Also lack of experienced instructors or teachers is a challenge to implementing RBL in higher learning institution, as is availability of computers in rural schools and universities. Teachers colleges were disbanded and only universities given the privilege for offering the teachers certificates and the degrees

According to Orey (2009) resource-based learning is an educational model designed to actively engage students with multiple resources in both print and non-print form. Traditionally, it has been used to supplement more instructivist teaching methods. Orey (2009) argued that learners should take responsibility for selecting resources that appeal to their own learning preferences, interests and abilities. In a resource-based learning environment, they become more self-sufficient:

Orey's (2009) view on the implementation of resource-based learning in the classroom can be beneficial for both the learners and instructors. It is important to know the steps that are involved in implementing a resource-based learning unit to ensure that maximum learning can occur. The first step is to identify instructional goals, thus a more structured learning environment is created and there is little confusion as to the outcome. For the fact that in RBL student participate actively in their study and learning. Schenck, Nel and Louw (2010:223) stated that the most important benefits of participatory evaluation are that much useful information is generated and relationships are strengthened. It enables the community to decide for itself what adjustment have to be made, evaluation results are empowering and it develops the community capabilities and skills to assess its own growth and development. It also builds on what the community knows and is doing and makes it aware of its own strength and assets. This is what CER and RBL encourage to build and improve the community structures and to equip students with relevant skills.

2.9.1 Steps in implementing RBL

According to Hollingsworth (2009:5) the following are steps in implementing resource-based learning;

- Identify the goal or goals
- Determine acceptable student-produced artefacts, including timeless, electronic slideshows, dramatic readings, videos, debates, postcards, reports, diaries, hierarchal web-based documents, or poster-board presentations
- Collaborate with the media specialist (ICT) to plan the unit, and divide the responsibilities
- Select resources in a variety of formats which can include diaries, web quests, original documents, newspaper and magazines articles, and *PowerPoint* presentations.

If there are no clear set of goals it would be difficult to implement RBL. Capital also is a resource in own right, because for the students to be enlisted in the particular school or university that institution should be well established financially. Resources require capital, so ICT members should be well-grounded with their expertise and qualifications. Identifying and implementing RBL needs skills and well-versed designers and lectures so as not to fall into the trap of being authoritarian or dominating students' capacity for thinking and freedom to think for themselves.

2.9.2 Benefits of RBL

Benefits of RBL listed by Hollingsworth (2009:9) were that it is more engaging and therefore more motivating, it helps students to be better learners and provides the training ground for development of the necessary literacy skills for learners to navigate the changing, sometimes confusing, landscape of information sources. The information literacy skills lessons are seamlessly interwoven into content lessons, so RBL enables students to independently meet their information needs during an activity. By using a variety of resources, students learn to effectively use almanacs, encyclopaedias, atlases, databases, technology tools and other

resources, and motivation is heightened because final products are readily displayed or presented, providing a consequences for a task successfully completed. Students feel empowered by the freedom to explore various topics and often perceive that they have uncovered knowledge unknown even to their teachers. RBL can significantly change teacher practices, challenging them to reinvent old instructional practices and routines in ways that reflect the changing world in which students learn.

2.10. DEFINITION OF OPERATIONAL CONCEPTS

The following key terms are defined here as used and understood in this study.

2.10.1 Resource-based learning

Armatas, Holt and Rice (2003:143-144) provided a definition of RBL which was provided by Rowntree in his study of motivating teachers for materials-based learning. It was offering learners the capacity to depend more on materials and less on face-to-face teaching than in other types of learning systems. The approach puts the onus on students to take responsibility for their own learning. On the other hand, Gibbs, Pollard and Farrell (1994, in Hay & Marais, 2004:65) defined the concept as learning that is closely sequenced, teacher-directed and programmed. The Saskatchewan Education Department (SED) in Canada, according to Hay and Marais (2004:65), defines RBL as the means by which facilitators help learners to develop attitudes and abilities for lifelong learning. This definition is however aligned more to sustainable learning ecologies as the learners' experience and environment shall be modelled to sustain learning. Also, the advantage of RBL is that it is accessible to urban and rural students, as highlighted by Hay and Marais, for whom such an approach can easily be used in distance, open and flexible learning. It means that students in RBL are not actually forced into face-to-face learning, in which the teacher will give instruction, but students can actively partake in their learning ecologies.

2.10.2. Sustainability

According to O'Grady (2003:1) in the early 1990s the Ecological Society of America (ESA) offered a definition that captures the general sense of the term 'sustainability' as employed in a wide variety of contexts: "management practices that will not degrade the exploited {eco} system or any adjacent system". For Schenck, Nel and Louw (2010:98) it is being able to support or continue adequately for an extended period, whilst (Maude, 2014:47 & Divecha and Brown ,2013:197) regarded it as the state or condition of being sustainable. Jordan (2013:119) wrote:

Sustainability also means using natural resources no faster than nature can provide them, maintaining the production of ecosystem services by conserving natural capital and critical functions of ecosystems, and generating no more waste than the environment can process effectively, while maintaining or improving the quality of human life).

Jordan (2013:212) stated that in a sustainable worldview, societies evolve toward cooperation and equity, with a diminution of war, crime and violence, and social justice becomes universal with every person's wellbeing the concern of every other. Several authors (Jordan, 2013:119-120; Rist, Chidambaranathan, Escobar, Wiesmann & Zimmermann, 2007:27) have suggested that sustainability also means using natural resources no faster than nature can provide them, maintaining the production of ecosystem services by conserving natural capital and critical functions of ecosystems, and generating no more waste than the environment can process effectively, while maintaining or improving the quality of human life.

Patterson, Baldwin, Araujo, Shearer and Steward (2010:139) believed that sustainability refers to the maintenance of a dynamic and continuous focus on who one is and what one is about, with respect for human dignity, agency, and a commitment to the shared intentions of the people at work within the system. However, in defining it from the perspective of higher education or general education, Cerillo and Hoyer (2014:2) stated that education for sustainability is a term that relates to environmental and ecological integrity, economic vitality, social justice/equity, and building upon large ideas, such as systems-thinking, interdependence, and community. Education for sustainability uses place-based education as a context, service learning as a major strategy, and sustainable

communities as a backdrop. O'Grady (2003:3) found that consensus emerged among some scientist (Donald Ludwig, Ray Hilborn & Carl Waters) but the notion of sustainability was riddled with uncertainty, difficult to pin down, and not addressing what seemed to be admittedly an outsider to their disciplines. A flaw in its reasoning was its privileging of duration or permanence as a value, as it runs counter to a fundamental principle in nature, framed succinctly by the sixth-century BC philosopher Heraclitus in his famous "river fragments" reworded by Plato in the *Cratylus* as, *panta rhei*, "all things flows" or "everything is in flux".

For this study, sustainability is understood to be stable knowledge of environment and the positive development of quality of life. It embraces peace, stability, freedom and democracy amongst nature and its inhabitants. It is the opposite of indirect authoritarian and oppressive forces, embracing collectiveness amongst living organisms.

2.10.3. Learning ecologies

According to Verster (2009:89) ecology, in biological terms, describes the evolving relationship and interaction between organism and their environment, whilst for Hodgson and Spours (2009 11):

Beyond the original fields of biology and the environment, recent ecological perspectives have been developed in a variety of ways to help shed the light on complex situation in a rapidly changing and fragile world.

Capra (1998:3) noted that the term 'ecology' comes from the Greek ***oikos*** ("household"), and in light of Verster's description of the concept, Mentz (2013:66) saw a need to multiply eco-critical models in response to an increasing recognition, which began in ecological science and has emerged in the humanities and social sciences more recently. According to Solomon (2000:8) the learning ecology is a vast and intricate network of systems, with a change in one part affecting all the others. Capra (1998:3) felt that being ecologically literate or eco-literate means understanding the basic principle of organization of ecological communities (ecosystems) and using those principles for creating sustainable human

communities. In particular, Capra believed that the principle of ecology should be the guiding principles for creating sustainable learning communities.

The term 'ecology' was mostly used in the biological sciences, but in this case it is used in describing a student environment, notably schools and universities. Within the ecological system there is an existence of various living organisms whose survival is based on the sustainability of the environment and a peaceful relationship amongst this species. Students and lecturers employ a reflective method so to give the others an opportunity and space to practice their beliefs. RBL facilitates the process of independence and sustainability in educational systems.

Verster (2009:89) saw one of the goals of learning ecology as being to create knowledge, and not only is knowledge-sharing therefore embedded in the sharing of content, resources and information but also the learning ecology plays a critical role. Hodgson and Spours (2009:9) noted that the terms 'ecologies' and 'eco-system' have traditionally been used to refer to dynamic interaction between plants, animals and microorganisms and their environment working together as a functional unit. They are seen as living systems containing a diversity of factors that interact with each another organically, are partially self-organizing, adaptive and fragile:

Ecological perspective are closely allied to a number of established system theories and forms of holistic thinking, they may offer new language to conceptualize change and stasis in a variety of environments, context and spaces of activity, which exist in linked scales or levels, ranging from global to the local, from the micro to the macro. (Hodgson & Spours, 2009:9)

In looking at the wholeness in educational systems culture, society and the whole ecology are taken as part of the learning process. Even the different theories are incorporated into the educational process, and the issues of theory and practice are also seen as part of the uniqueness of the learning ecologies.

2.11. RELATED LITERATURE LINKED TO RESEARCH OBJECTIVES

A number of issues are linked to research objectives, examined in this section.

2.11.1. Identifying RBL tools suitable for the creation of sustainable learning ecologies

In identifying tools for the creation of sustainable learning ecologies it is important to note that CER as a research tool itself incorporates the dimensions of learning ecology, social and educational. RBL also has various tools that create sustainable learning ecologies in higher education. Jordan (2013:122) stated that powerful techniques are available for analysis and forecasting of complex systems and for making use of uncertainty to qualify the results. Multiple tools shall be discussed in detail and, as has been noted above, universities and higher education play a critical role in current learning ecologies, future learning ecologies, politics and global economies. The university student, who is taught in the best methodology of teaching, is the one who can integrate theory and practice. Practically, it would be favourable if the tools and resources of learning are available at hand to the student. Mcmillin and Dybal (2009:57) believed that good pedagogical practice in any degree programme involves demonstrating to students the connections between theory and practice so that that they are able to recognize their relationship with their broader world.

For Butler (2012:221) RBL teachers must pay “careful attention to pedagogy, including learning outcomes to be achieved by students from that project and methods of feedback, also in this model [as] students learn by using resources” with information and communication technology, which support learning in a more flexible way. Biswas, Leelanwong, Schwartz and Vye (2005:364) wrote that: “Unfortunately, current pedagogical practices tend to emphasize memorization, which provides students with limited opportunities and little motivation to develop ‘usable knowledge’”, whilst according to Butler (2012:222) most universities use *BlackBoard* and other web course technology. RBL is a pedagogical approach associated with inquiry and project-based learning in which the students work with a wide range of learning resources rather than from class exposition. It may be used with a variety of epistemological models as students have materials and resources relevant to their learning process. There is a sign of a paradigm shift from old-fashioned methodologies of teaching to new forms in which students take an active part in their learning process. CER emphasizes freedom of learners in an educational setting, as opposed to the ‘banking mode’ (Butler, 2012:222) of

education in which an all-knowing teacher stands at the front of the class or lecture hall and 'data dumps' (Butler, 2012:222) knowledge into awaiting (empty) students' minds. Students and teachers may find RBL appealing as it is underlain by a philosophical assumption that allows the latter to achieve learning outcomes in a more flexible and independent manner.

From another perspective when checking at this current age, technology is also an RBL tool which is frequently used in most university modules. Hannafin and Hill (2007:525) found that the digital age had both redefined the nature of information and transform educational resources, such that resources no longer needed to be intact or self-contained but could be readily repurposed, and assembled from virtually anywhere to address individual goals and needs. The educational implications have only begun to emerge as homes, schools, classrooms, workplace and community centres become increasingly resource-based, including books. Other authors (Greenhow, Dexter & Riedel, 2006:6; Hill, 2001:8) stated that although tools and search engines generally help to locate potential resources they do not help an individual to determine their meaning or relevance. Hill (2001:380) added that individuals must recognize and clarify learning needs, plan a strategy to address them, locate and access resources, evaluate their reality and modify approaches based on an assessment of learning progress. Hannafin and Hill (2007:526) also pointed out that resources and tools were typically static, created and published by companies, and were used largely intact to address specific, well-defined needs and goals. The Internet as an educational resource is now used by students to access information, but as Hannafin and Hill (2007:528) found that RBL does not embody any particular epistemology but rather provides a process through which epistemologically different but grounded learning models are enacted.

Tools enable learners to engage and manipulate both resources and ideas, varying with context and intention (Hannafin & Hill, 2007:529). They can support different activities based on alignment with given learning models, and if available for students, for example, mobile telephones and computers, can facilitate learning in remote areas. Puntambekar and Hubscher (2005:5) stated that one of the most widely used mechanisms for providing support was based on the notion of making the tacit explicit, whether in the form of providing support for a process or a task or by graphical representation. In RBL, intact tools such as books and graphic

materials are used to give student hints or support of their given task. RBL, on the other hand, enables the teacher and students to achieve common understanding of the objectives of the lesson. In RBL, tools have purpose and aims as they promote learning in conducive ecologies.

Four different types of tools were listed by Hannafin and Hill (2007:529) to shed light on the available RBL tools which can be used in an educational setting:

- *Processing tools:* These help to manage cognitive demands associated with different RBL models, for example, spreadsheets when embodying objectivist epistemology enable learners to manipulate scenarios to test the limits within a simulation, extend their cognitive abilities, and reduce the extraneous cognitive load associated with tasks and mental manipulation.
- *Searching tools:* These can be used as directed as well as learner-centred environments. They include the Internet and search engines, library and data bases that have information on various catalogue, journals and related articles.
- *Manipulation tools:* These are used to test or explore, allowing the testing of environmental scenarios and manipulation of systemic concepts such as global warning in ways otherwise impossible or impractical.
- *Communication tools:* These support the ability to exchange information and ideas. Asynchronous tools such as e-mail, podcasts and blogs enable and sustain access among learners, instructors and experts. Synchronous communication tools (e.g., instant messaging, video conferencing) provide access to others in real time, whether located a few rooms away or around the world.

Campbel, Flageolle, Griffith and Wojcik (2009:3) supporting the RBL tools as creative in sustainable learning ecologies, stated that sometimes teachers employ a variety of media to teach the lesson or unit, perhaps showing videos or hypermedia presentations in teaching a specific module. Sometimes the guest speaker comes at the teacher's invitation to speak to the class, but in RBL the focus shifts from the teacher using resources to facilitate instruction to students directing their own learning through their choice of resources: "In practice, RBL occurs along the continuum from the more teacher centered to the completely student centered"

(Campbel et al., 2009:4). Currently, students use various technological devices such as mobile telephones and *Blackboard* to access information and learning tutorials.

Hopkings (2012:3) cites a study conducted by Masaru Yarume and Yuko Tanaka, on existing assessment tools that rarely cover important aspects of education, research and other activities, but rather focus on sustainability of the physical campus. According to Masaru and Tanaka the physical elements of learning context focussed on communities and the learners themselves. This was a reductionist view that is selective and subjective in its endeavours to seek the truth. Hopkins (2012:3) refers to Clemens Mader's research into assessment in the Austrian Sustainability Award, a first national attempt at sustainability appraisal which includes sustainability and social responsibility performance of the university, Graz Model of Integrative Development (GMID), which proposed a holistic approach establishing links between university leadership, university inclusion in social networks, and participation of stakeholders as well as the traditional courses and research.

RBL tools, tangible or not, play a role in students' personal development and social development. Physically and cognitively they help to shape the future of learning situations. In a diverse environment, technology manages to nullify divisions amongst the lecturers and students. Diversity is managed by RBL as it increases cooperation and team work. The latter statement was alluded by Grant (1991: 119) by stating that productivity requires the cooperation and co-ordination of teams of resources, which would bring people together.

2.11.2. The context for the creation of sustainable learning ecologies

It is important to note Hannifin and Hill (2007:529) view that in problem-based learning models the context typically enables multiple issues to be identified and studied using resources to support individual approaches. In creating sustainable learning ecologies in higher education the outline suitable for the context shall be provided. Hannifin and Hill (2007:528) identified the following three contexts suitable for RBL application: *external context*: in this case the situation is supplied to the students, or problems are provided by an instructor or external agent to orient them

to a particular learning goal; *individual context*: learners establish learning context based on their unique circumstances or needs, consistent with constructivist epistemology and RBL approach. Individuals establish the learning context, define their knowledge and skill needs, identify resources to meet the needs, and situate the resources meanings to address their needs; *negotiated context*: this is the combined aspects of external and individual context. For Song and Hill (2007:33) the learning context not only impacts on the way the learners plan, monitor, and evaluate their learning (process), but it also has the potential to influence how a learner becomes motivated to learn, and how he or she uses various resources and strategies to accomplish learning in the specific learning context, Different contexts are seen from different perspectives by teachers and learners.

2.11.2.1 Social Context

Reed, Evely, Gundill, Frazey, Glass, Laing, Newig, Parrish, Prell, Rymond and Stringler (2010:6) stated that social learning may be defined as a change in understanding that goes beyond the individual to become situated within the wider social unit's interactions between actors within social networks. Society plays a role in students' learning processes, with social structure and the socialization process important components. According to McCathy, Crandall, Whitelaw, General and Tsuji (2011:18) the integration of typology of knowledge, critical reflection and scale of ecological structures provides an opportunity to map a trajectory of social learning in a particular social ecological system context.

Ecological learning follow individualistic motives but systems also play a role, such as family, governance and departments of education, whether local or national. Components of the system, such as sport clubs or workplace can map the route to progress due to the experiences of the same people of the community, including students. Reed et al., (2010:6) state that social learning can be conceptualized as a process of social change in which people learn from each other in ways that can benefit wider social-ecological systems. Although social learning may be both a process of people learning from one another and an outcome, for example, as a result of social interaction, it is often defined in relation to its wider range of potential outcomes. Students are part of the community so are also part of the system, for

example “improved management of social ecological systems, enhanced trust, adaptive capacity, attitudinal and behavioural change, stakeholders empowerment, strengthening of social network” (Reed et al., 2010:6). The concept ‘teacher’ is twofold because, as older members of the community, teachers provide an oral history to their children and the community can master their own history and destiny. It is vital also for the critical researcher to question the social structures of the society because, in summary, the community knows best what is happening in their structures compared to an outsider. In this context, students had knowledge to which their teachers do not have in some cases.

2.11.2.2. Individual learning context

Jackson (2013:1) mentioned that knowing how to create and sustain a learning ecology is an essential part of ‘knowing how to learn’ in all different contexts that comprise an individual’s life: “Self-created learning ecologies are the means by which experiences and learning are connected and integrated across the contexts and situations that constitute the personal life”. An individual learning ecology comprises the process and set of contexts and interactions that provides them with opportunities and resources for learning, development and achievement. Jackson adds that personal learning ecologies are created within social environments and contexts, and in such eco-social systems the social cultural arrangements of practices and artefacts, and the ecosystem of environmental processes are treated as a single unified system.

According to Ellis and Goodyear (2010:136) the idea of a university as a context and as an ecology of learning resonates with some recent international developments in planning and researching learning spaces. As the learning benefits of integrating virtual and physical spaces are starting to be realized, investment in a variety of learning spaces is occurring in many higher education systems. These include classrooms, lecture halls and libraries but depend upon the task given and the method of application of the given project. It is important that the context be conducive to the students, and as Ellis and Goodyear (2010:136) indicate, if the learning context does not promote an effective integration of learning back and forth across physical and virtual spaces the quality of student learning will be put at risk.

2.11.2.3 Individual will and capability

Jackson (2013:4) stated that processes in the eco-social system do not happen by themselves but have to be created by people who have the will and capability to create them. They have to be imagined, planned to a greater or lesser degree, and choices made about what or what not to do. The effects have to be observed and experienced and actions modified in response to what happens. Jackson (2013:4) concludes that processes are the product of individuals engaging with situations in their context, whether or not of their own making but able to exert influence through their thinking and self-determination. Will and motivation play roles in students' understanding of their ecologies and learning material. The university is not for all but for those able and willing to manoeuvre through the system. Some may be good with theory, others with practice, but these are complementary.

2.11.2.4 Forethought

For Jackson (2013:5) people do not engage in tasks, set goals or plan and work strategically if they are not motivated by strong personal agency. In particular, self-efficacy, that is, personal beliefs about having the means to learn or perform effectively, and outcome expectations, namely personal beliefs that the outcome will be worthwhile, are key features of personal agency. Forethought involves decisions to engage with a situation, when problems, challenges and opportunities are imagined, ideas generated and evaluated. They are assessed and decisions made on how to approach and work in a certain context. This depends on the goals of the individuals and helps determine the passion and eagerness to continue with the learning process.

2.11.2.5 Action, capability and perform

Jackson (2013:5) argues that the doing (acting and performing) part of the self-regulation model distinguishes many sub-processes, e.g., notion of self-instruction, seeking and using the environment to create resources for learning. It involves

engagement with emergent problems in real time, structuring the environment to create resource for learning, adaptation and transfer of ideas to a new context, the use of a repertoire of communication and inter-intra personal skills to achieve a goal. Capability embodies the ability to do and accomplish, for example, building and utilizing a learning ecology to define and judge in terms of the appropriateness of what is being done, how well it is being done and the effectiveness in achieving goals of what has been done. Jackson adds that capability to create and use a learning ecology to achieve a particular purpose involves a complex set of skills, qualities and attitudes that must relate to the key dimension of a learning ecology, as follows: (a) to comprehend situations (problems and opportunities) in particular context; (b) to develop strategies for developing new knowledge and understanding in order to deal with particular situations; and (c) to form new relationships and create new resource that will enable problems to be exploited. The students must continue with their learning and the lecturers continue to use their teaching resources. Equal distribution of resources can facilitate the learning process.

2.11.2.6 *Reflection and meaning making*

According to (Jackson 2013:6 & Barron,2006:195) reflection allows one to stand back, see the broader picture and make more sense of what happens to draw deeper meanings form experiences. This process consolidates learning of the effects in particular situations and context to draw on in future.

2.11.2.7 *Value of the self-regulatory model*

(Jackson, 2013:6; Wilkin, 2014, 188 & Ryan and Deci 2000, 55) regard the strength of self-regulated learning as an ability to integrate critical (analytical) and creative (imaginative and intuitive) cognitive process, and emotional, sensorial and physical worlds. It treats people as whole beings who not only orchestrate their actions in the world but also respond to the feedback about the world and its effects. Intrinsic and extrinsic motivation of students would be rejuvenated by self-regulatory learning.

2.11.2.8 Time

According to Jackson (2013:6) eco-social processes form bridges between past, present and future context and situations that one encounters or creates in life. Learning ecologies connect moments and the thoughts and actions undertaken and help organize them into more significant experiences through which one can begin to see new patterns of understanding. The students experience their environment as mentioned above, through interaction with societal structure and the occurrences will result in looking at their problems and successes from another angle with a clear understanding. Therefore, the approach will be managed as the past experiences have taught the students how to handle the subject matter at hand.

(Jackson, 2013:7 & Barron, 2006:197) also note that learning ecologies are part planned and deliberative, part intuitive, accidental and opportunistic, resulting from interactions with opportunistic results as guided by a sense of purpose that has meaning. They pervade social interaction and underlie the context of family, work, study, hobbies and other significant activities that involves interacting with the environment and the people in it.

2.12 SYSTEMS

Jackson (2013:8) stated that ecologies are living systems that contain a diversity of factors that interact with each other organically. Framing experiences within an ecological paradigm underscores connectivity and relationships with other people in the life world and physical, emotional, and cognitive behaviours as they occur in relation to specific environmental contexts and situation. Creating the context in this study is easy as most of the learning contexts are available, though they depend upon the specific student and task given or the specific community and their accommodative contexts. Bronfenbrenner's conceptual framework provides the following types of systems (Jackson 2013:8-9):

2.12.1. Microsystem: contains the factors within people's immediate environment, the day-to-day situations they encounter and their relationships and communications with those with whom they meet or interact using communication technology. This is the level of learning ecology, the context, tools, technologies and resources one is able to draw upon to do what one has to do and the level on which one creates new ecologies for learning and achieving.

2.12.2. Mesosystem: encompasses interrelations of two or more settings, for example their wider experiences in life and the university course they are studying. It is the level at which guidance and tools are provided to help learners fulfil the requirements for their programme.

2.12.3. Exosystem: is the ecological level on which an institution adopts and embeds certain policies that affect the way a programme is designed or determined. In a broad sense it is the types of attributes the institution wants to see as an outcome of the education it provides.

2.12.4. Macrosystem: is the wider society in which all other settings are nested, including the socio-economic, cultural and political context. It includes governmental policies and strategies for promoting and supporting lifelong learning. This is the ecological level of the higher education system

2.12.5. Chronosystem: encompasses change or consistency over time, not only in the characteristics of the person but also of the environmental in which he or she lives, for example, change over the life course in family structures, socio-economic status, employment, place of residence and ability in everyday life.

All systems have units and components which are related. Any damage to a cell would cause the whole system to be dysfunctional, therefore the idea is that for RBL to be implemented correctly the whole ecological system should be taken into cognizance. Students and lecturers should work together, whilst the community should work together with the ecology and subsystems, including educational departments, policymakers and the government of the day. RBL can be used to create sustainable learning ecologies in higher education.

2.12.6 Learning ecologies in academic and non-academic context

Jackson (2013:9) writes:

Learning ecologies are a feature both of formal educational settings, where the ecology is largely determined by institutions and teachers, and informal learning settings, where ecologies are largely determined by individuals and groups without the mediation of people whose business is education.

Outside the educational environment people create entirely different learning ecologies that reflect the different learning ecologies in different contexts, and the purposes and activities in which they engage and generate across their lives, for example, family and friends and the workplace. They use colloquies in playing sport with teammates and pursuing hobbies, situations that provide opportunities for the creation of learning ecology through which purposes are prosecuted, relationships developed, and people interact or collaborate to accomplish goals.

Table 2.2: Categorizations of learning ecologies and their educational context
(Adapted from Jackson, 2013:13)

Partly determined by the learner

Completely determined by learner

<p>B) ENQUIRY, PROBLEM & PROJECT BASED LEARNING ECOLOGIES</p> <p>Pedagogic processes encourage learners to create their own processes for learning, to define and explore problems, and discover resources and solutions for themselves.</p>	<p>D) SELF-DIRECTED & SELF-MANAGED LEARNING ECOLOGIES</p> <p>Purpose, goals, context, content, process, resources and relationships entirely determined by the learner. However, learners may choose to incorporate OER and OEP (e.g., reflective processes) into their learning process.</p>
<p>A) TRADITIONAL FORMAL EDUCATIONAL LEARNING ECOLOGY</p> <p>The context, purpose, goals and objectives, together with content (resources), process, and relationships are all determined by the provider</p>	<p>C) SELF-DIRECTED BUT SUPPORTED LEARNING ECOLOGIES</p> <p>Content, goals and the learning process are largely determined by the context the learner chooses or generates for themselves but support in the form of advice and guidance is given to facilitate learning and achievement. OER might be used to supplement the learner's own resources.</p>

Jackson (2013:13) provide the following different learning ecology scenarios as depicted in Table 2.2:

➤ Traditional formal educational learning ecology

Classroom-based learning is an ecology in which teachers work within a traditional teacher-student relationship with a pre-determined curriculum or syllabus containing specific knowledge and opportunities for skill development. It is supported by an appropriate set of resources that engage students in a process with the explicit purpose of learning. Learning and achievement are assessed by the teacher or by a recognized external authority, such as an examination board. In this type of learning ecology the learner has little or no involvement in the design of the learning

process or the resources they will utilize, but rather he or she is subjected to the authority of teachers.

➤ Enquiry, problem and project-based learning ecologies

There are pedagogies, such as problem-based, project-based and enquiry-based learning that actively encourage learners to define and explore problems, build and utilize relationships of learning, and discover resources and possible solutions for themselves. Such practices help them develop the will, capability and confidence to create their own learning ecologies in the world outside formal education. Mostly, in project-based learning they are participating without fear or anxiety as they communicate on the same level as their fellow students.

➤ Self-directed but supporting learning ecologies

Educational context, for example, negotiated work-based learning (NWBL) or life wide education (LD) proceed in an unstructured learning environment, such as workplace, community or family. Such educational contexts require learners to be self-directed and to create their own learning ecology. They determine either independently or through negotiation the goals and objectives, process, relationships and resources in their learning ecology, with support in the form of advice and guidance.

➤ Independent self-directed learning ecologies

This conceptual space allows people to create learning ecologies for their own purposes, typically for their own learning projects in work or other self-generated contexts. Their learning is not driven by the need or desire for formal recognition by a credible educational authority. They determine goals, contexts, content, process, resources and relationships.

2.13 SCAFFOLDING RBL TEACHING AND LEARNING EXPERIENCES FOR CREATION OF SUSTAINABLE LEARNING ECOLOGIES

Scaffolding as a concept will be discussed in relation to the framework of CER and critical theory. Boblett (2012:12) notes that the definition of scaffolding has

undergone several modifications since it first appeared in child psychology research and has opened up several areas for future research, the most recent work being on learner agency and dealing with the unplanned and unpredictable nature of contingency. Learning is a complex process requiring support from many angles if the student is to achieve what is intended. Implementation of the key features of scaffolding is critical in this research, the main aim of which is to help students.

As Butler (2012:223) stated, individual constructivists see learning as collaborative with meaning negotiated from multiple perspectives, whilst Walqui (2006:160) stated that social interaction is the basis of learning and development, and a process of apprenticeship and internalization in which skills and knowledge are transformed from the social into cognitive plane. RBL and CER postulate that systems interact to facilitate learning and collaboration of society to achieve a particular purpose vital considering the context and the problem at hand. In RBL, students work in small groups together, collaboratively rather than individually, and the teacher will be the facilitator rather than a dominating or authoritarian figure. The main aim is that the students solve the complex task easily, are motivated and students develop necessary skills and coordination.

According to (Murtagh, 2010:4 & Botlett , 2012:1) scaffolding embodies much of the activity in classroom teaching and teacher-learner interaction. As scaffolding has become popularized it has often been adapted as a general term to describe all types of support and guidance offered in the classroom:

A scaffolding is a temporary structure to support and protect the construction of a building, dismantled at its completion, also scaffolding as a metaphor in teaching and learning describes a system of temporary guidance offered to the learner by the teacher jointly offered to the learner by the teachers when the learner no longer needs it (Boblett:2012:1).

According to Putambekar and Hubscher (2005:2) scaffold support is later removed when construction is completed and, figuratively, the tunnel or arch can stand on its own. Considering that the child does not remain stagnant or in the same position for the rest of his/her life, he or she grows and develops as an adult until death, similarly, the scaffolding is not permanent. However, even for the researcher in this study the concept scaffolding is taken from the natural sciences, where it was mostly

used in physical science and building construction. Due to the changing environment and multidisciplinary studies in universities it has been used in a human relation context, such as support for children or students in their learning environment or ecologies. It had little use in the learning environment, but due to the theoretical basis of Vygotsky and others it can be linked to human support in different ways. In RBL, scaffolding is an appropriate concept as it is not an individual endeavour but collective, fitting also within the theoretical framework of this study CER. Puntambekar and Hubscher (2005:1) stated that with an increase in project-based, design-based and resource-based learning environments for teaching science and maths in the context of a classroom, the notion of scaffolding is now increasingly being used to describe the prompts and hints provided in tools to support it.

According to Louw and Louw (2014:265), the process of scaffolding includes sensitivity to children's current level of ability, while introducing stepwise training and advice on acquiring new, developmentally appropriate skills. Julie McKoy, in her study presentation of Bruner's outline of scaffolding listed four purpose of scaffolding which allow the child to achieve higher levels of development: (1) simplifying the task or idea; (2) motivating and encouraging the child; (3) highlighting important task elements or errors; and (4) giving models that can be imitated. Puntambekar and Hubscher (2008:4) note that the notion of scaffolding is now increasingly being used to describe the support provided in tools to help student learn successfully, including curricular and artefacts that are being used to support student learning in classrooms and promote peer interaction.

According to Boblett (2012:2), the term 'scaffolding', as it relates to learning and learner development, was coined and defined in 1976 by Wood, Bruner and Ross in their study of adult child interaction during problem-solving tutorials in which three- four- and five-year olds were paired with an adult to form dyads. Walqui (2006:162) acknowledged Vygotsky's finding that social interaction precedes the development of knowledge and ability, consciousness, the notion of self and identity, physical skills and mental abilities, all of which have their origin in social interaction between the child and parent, and between the child, peers and others, including teachers. The adult guided the child through the use of appropriately calibrated support during the interactions, leading him or her toward successful

completion of the assigned task. Boblett (2012:2) listed this practice as having six features:

- Recruitment, or piquing the child's interest in the task
- Reduction in the degree of freedom, to avoid overwhelming the child by using incremental steps in the problem-solving process
- Direction maintenance, through keeping the child in pursuit of the goal
- Critical feature-marking, for drawing the child's attention to what is significant
- Frustration control, to ensure that the child will experience minimal angst while completing the task
- Modelling or demonstrating, the solution to a step in the task, which imitates in an appropriate form.

Boblett (2012:3) regarded Vygotsky's development of the ZPD concept was influenced by his focus on the development of higher mental functions, notably the importance of an individual's potential for development based on which mental functions were maturing, and his arguments concerning the part that formal instruction played in the process of psychological development. Vygotsky's ideas concerning instruction and pedagogy as they related to the ZPD were explicitly expressed, with 'instruction' meant to provide tools for thinking and ways of acting in the world. There is a connection between system theory and CER as well as socio-cultural theory. However, as Boblett (2012:4) stated, the work to be done within ZPD is described as that which allows learners to accomplish what they are unable to accomplish unassisted, as scaffolding is supposed to do. The guiding work occurring during collaborative interactional work of scaffolding matches the type of work to be carried out within the boundaries of the learner's ZPD. Lastly, the concept 'appropriation' is reflected in removing the scaffolding as learners successfully move through a task.

2.13.1 Mediation and appropriation

Boblett (2012:4) stated that mediation is the process whereby an individual connects to and learns from the surrounding social and cultural environment, and it lies at the core of socio-cultural theory. These connections develop as the child

interacts with other individuals and environmental surroundings to form the basis for how a community manages to communicate, and how a member of the community comes to understand the meaning and value of experiences and material goods. 'Appropriation', meanwhile, is a process of transition from inter-mental to intra-mental functioning. The transmission of social culture from individual to individual and from generation to generation was emphasized by Vygotsky, and according to Boblett (2012:5) scaffolding as defined in its original incarnation is based on the collaborative interaction (mediation) between expert and novice as active participants, the goal of which is the novice taking in (or appropriating) the content of a particular social interaction.

Scaffolding can be of importance in helping students at universities and higher education institutions in general. Good implementation of scaffolding strategies can be of use and students and the university can benefit from the positive success rates and positive output rate. It encourages students to in engagement and can foster quality in learning modules offered. Students can experience theory and practice as RBL has the potential to make them critical of the subject matter, and develop analytical skills, communication skills and collaborative engagement. These can enhance sustainable learning ecologies in higher education institutions as the macro-system interaction should be helped by the university management, educational departments and government to include scaffolding measures in the academic curriculum. Young people need to be actively engaged and become responsible citizens if they are to find effective and just solutions to the problems of climate change and sustainability through democratic processes. It is not a forced approach but willingness to help and support for a better future. Nor is it permanent as the person who is helped should one day be free and independent to execute his or her task without interference from those who once helped. All teachers, once in their teaching profession, should have used some form of scaffolding.

According to Walqui (2006:164) in the pedagogical context, scaffolding has come to refer to both aspects of the construction site, that is, a supportive structure which is relative stable, though easy to assemble and re-assemble, and the collaborative construction work that is carried out. The scaffolding should be taken as a process, not as rigid as it seems, but as a whole process of building that is more related to system theory and CER. Walqui (2006:164) further argues that the dynamics

between the scaffolding structure and process requires constant evaluation as parts of the former can be shifted or dismantled. In education, there are three related pedagogical 'scales', firstly, providing a support structure for certain activities and skills to develop; secondly, actual carrying out of particular activities in class; and thirdly, assistance provided in moment-to-moment interaction. Schematically, Walqui (2006:1640) presents it as follows:

Scaffolding 1: Planned curriculum progression over time (e.g., a series of tasks over time, a project, a classroom ritual)

Scaffolding 2: The procedures used in a particular activity (an instantiation of scaffolding 1)

Scaffolding 3: The collaborative process of interaction (the process of achieving Scaffolding 2)

According to Walqui (2006:164), even though the three scales suggest a top-down structure there is also bottom-up change that can affect and transform the scaffolding at the top, as scaffolding is premised upon the notion of handing over (by teacher) and taking over (by student). Assistance provided should be just enough and just in time, as the students are able to do more and gradually come to be more in charge of their own learning, with the upper level (macro) scaffolds changed, transformed, restructured or dismantled. (Lier, 2004, in Walqui, 2006:165) listed six features of pedagogical scaffolding which are important in educational setting, however these are refined and features specific to schooling added: namely, **continuity**, in which tasks are repeated, with variations and connected to one another (e.g., as part of the project); **contextual support**, in which exploration is encouraged in a safe, supportive environment, with access to means and goals promoted in a variety of ways; **inter-subjectivity**, by which mutual engagement and rapport are established and there is encouragement and non-threatening participation in a shared community of practice; **contingency**, with task and procedures adjusted depending on actions of learners. Contributions and utterances are oriented towards each other and may be co-constructed; **handover/takeover**, involving an increasing role for the learner as skills and confidence increase. The teacher watches carefully for the learner's readiness to

take over increasing parts of the action; and **flow**, in which skills and challenges are in balance, and participants are focused on the task and 'in tune' with each other.

Scaffolding has been used in different contexts by various researchers (Hill & Hannafin, 2001:45; Buus, 2012:13; Boblett, 2012:8) in the educational context focus on classroom context shows the teacher supports the children. Vygotsky saw it from a psychological perspective, as the child's level of mental functioning, whilst Cumming-Potvin (2007:488) reported that some researchers had examined the metaphor of scaffolding from a complementary and independent perspective that considered more closely the apprentice and learner engagement.

The slight skew of the research in RBL in creating sustainable learning ecologies is the lack of studies in usage and implementation of scaffolding in higher education institutions. It is therefore necessary to recognize the scaffolding as one of the techniques to be used in higher education. As most of the studies using scaffolding had infused it with social construction it is important to stress that the critical theory and RBL can also contribute to creation of knowledge. Association of related concepts between the theories leaves student free to participate, and as they are independent they can select their material of learning. There is also an advantage of learning as there is collaborative work and exchange of ideas. Books, poetry and magazines can help the student to be critical of the material with which they are busy.

According to Puntabekar and Hubscher (2005:3), another key element of scaffolding is that the adult provides appropriate support based on continuous diagnosis of the child's current level of understanding:

One of the critical factor or feature of scaffolding is fading the support provided to the learner so that the learner is now in control and taking responsibility for learning., there is a transfer of responsibility from the teacher to the learner moves toward independent activity.”

However, critical theory and CER give students an allowance to engage and so can contribute using their available ecologies and learning spaces. A more theoretical exploration using qualitative studies should be undertaken by scholars as the clear outline of what actually is the scaffolding work, function, advantages and

disadvantages should be explored. Puntambekar and Hubscher (2005:2) stated that central to successful scaffolding is the notion of a shared understanding of the goal of the activity.

Walqui (2006:170-171) identified the following types of instructional scaffolding:

Modelling - when introducing the new task or working it is important that the learners are able to see and hear what a developing product looks like. Walking students through an interaction or first doing it together as a class activity is a necessary step.

Bridging - activating students' prior knowledge, as they will only be able to learn new concepts and language if these are firmly built on previous knowledge and understanding.

Schema building - in preparation for an assignment, for example, a teacher may ask students to preview the text, noting heads and subheads, illustrations and their captions, titles of charts. Students begin their reading with a general sense of the topic and its organization, with their schema already activated and ready to accept new information.

Metacognition - the ways in which students manage their thinking, including at least the following four aspects: (1) consciously applying learned strategies while engaging in activity; (2) knowledge and awareness of strategic options a learner has and the ability to choose the most effective one for the particular activity at hand; (3) monitoring, evaluating and adjusting performance during activity; and (4) planning for future performance based on evaluation of past performance.

2.13.2 Utilizing Scaffolding in Pedagogical Approaches

Boblett (2012:8) found that alongside the empirical studies analysing the interactional makeup of scaffolding as a teaching point were a number of new approaches to teaching and learning that included scaffolding as a teaching point, which in turn contributed to its definition. This is true, considering RBL as a teaching mechanism that is used to transmit and transform information and change the

communities using CER as a theoretical framework. Boblett (2012:8-10) listed four approaches, as follows:

- Reciprocal teaching

According to Boblett, this involves a dialogue between the teacher and the learner wherein the teacher modelled skills while reading a text, such as asking questions and rephrasing. The learner gradually takes on greater responsibility for controlling the collaboration, eventually assuming the role of the teacher. The scaffolding techniques used by the teacher are rephrasing and elaborating on statements made by the learners, and asking questions. The interaction between the teacher and the learner may bring about results in which the learners can be successful, and their participation is increased so they can master learning strategies used in the particular lesson. Leadership skills also develop as they assume responsibility for their own work. In this type of scaffolding the support is not permanent after the learner assumes the responsibility then gradually the scaffolding is taken away. As mentioned above, the arch or building can then stand on its own.

- Instructional scaffolding

Boblett (2012:8) referred to Langer and Applebee's search for an effective reading and writing instructional model, also called 'instructional dialogue'. It includes the following characteristics: ownership, or giving the learner a voice and a sense of purposefulness in relation to the task; appropriateness, through building tasks based on the learner's current knowledge; structure, by representing tasks in a context of supportive dialogue that provides natural sequence of thought and language; internalization, or gradually moving control of interaction from teacher to student, after which scaffolding collapsed.

- Assisted performance

According to Boblett (2012:9) this type of scaffolding includes important details which suggest a ZPD was not only important to child development, but also to the learning and development process of older children and adults.

- Guided participation

Boblett stated that guided participation was meant to include not only verbal interaction between humans but also non-verbal interaction with materials and fellow participants in the classroom. The specific social and cultural values were offered to the learner outside the classroom.

2.14 OPTIMIZING RBL AS AN AGENT OF CHANGE FOR SUSTAINABLE LEARNING ECOLOGIES IN HIGHER EDUCATION

To optimize RBL as an agent of change for sustainable futures there are many areas that need to be explored. RBL has changed many educational teaching and learning approaches, but for this study and exploration of implementation of RBL in higher education various reasons are provided in this section.

The dynamics of one-to-one or face-to-face teaching and learning has been challenged and in some cases changed: “Online learning has attracted much attention from scholars and practitioners” (Song & Hill 2007:27). This had made RBL a changing agent for a sustainable future education mode to meet the current educational demands in creating sustainable learning in higher education. RBL, material-based, embedded base learning, and project-based learning has brought about change in the autonomous base of traditional learning process. Technological tools have also contributed to the changing dynamics for creation of sustainable learning ecologies for the future. It is evident that in this current age the old methods of teaching are practiced in a limited space. RBL as an agent of change introduced the appreciation of the ‘customer’, ‘agent’, and ‘student’, such that they have a role to actively partake in their learning process. In RBL, students are viewed as humans who are part of the larger system in which they live, and are in some projects self-controlled with control over their work. According to Song and Hill (2007:32) this involves self-directed learning, which is similar to RBL emancipation of students. These however are signs of change that RBL can bring and in some areas are completed or in practice. In the old traditional teaching pedagogies students’ attributes were not taken into consideration, but in RBL their personal attributes were. As Song and Hill (2007:23) indicated, personal attributes are characteristics learners bring to a specific learning context, for example, intrinsic motivation and resourcefulness, together with their prior knowledge of the content area and prior

experience of the learning context. It is important to remember that students are humans who have experience and certain knowledge, bringing something to the learning environment, and not blank minds. For Schenck, Nel and Louw (2010:73) nobody is absolutely ignorant or absolutely knowledgeable. They are not 'empty vessels' into which knowledge and information can be deposited, but rather knowledgeable, possess the ability to think abstractly and critically and able to learn through self-reflected learning.

RBL can be an agent of change for sustainable learning for the future, as a tool itself in teaching and learning spheres that has brought about change in the way learning is learned and offered to both teachers and students. It had well-suited tools and application to take education into the higher levels, and used as a pedagogical agent to change the dominating teaching methodologies. Including agents of metaphors which can harvest the big repertoire methods of learning, it is a changing agent as it has the potential to include students in their academic planning and team interaction. The valuable interaction mentioned by Biswas, Leelawong, Schwartz and Vye (2005:365) is one form that helps students develop structured networks of knowledge that have explanatory value. A second form of interaction needs to help students take responsibility and make decisions about learning; and the third aspect that has shown exceptional importance for learning is the development of reflection or meta-cognitive skills that include monitoring the quality of one's knowledge and learning decisions. In RBL there are various ways of learning and teaching, including various tools, for example modelling and simulation, picture or graphical designs and illustrations.

Learning in higher education has changed in various disciplines and contexts, from the novices to academics and professionals. Globalization contributed to changing ecologies, approaches and behaviours, whilst technology has accelerated the pace of changing learning environments. Multidisciplinary approaches and use of a matrix of terminologies from different disciplines have mounted and this reflected the changes in higher education learning ecologies and the maintenance of sustainable applications. New support structures are currently in place, such as scaffolding usage in educational environments that were previously thought of as useful to engineers only in construction of buildings. RBL uses scaffolding as one of its support structures for creation of sustainable learning ecologies for the students and

their surrounding communities. Biswas et al. (2005:369) include the following agents of change and learning which are similar to the one's proposed by RBL: implications in teaching and learning; teaching through visual representations that organize the reasoning structures of the domain (e.g., directed graphs, matrices), built on well-known teaching interactions to organize student activity (teaching by "laying out"; teaching by example; teaching by modelling; and ensuring that the agents have independent performances that provide feedback on how well they have been taught.

RBL and students are both agents of change in creating sustainable learning ecologies for the future in higher education. For the student to succeed the resources have to be allocated fairly and be adequate. In all the activities that students (agents) engage in they will learn, create knowledge and receive information. Amin and Cohendet (2000:98) stated that agents (students) have cognitive abilities that change through time, and at a given moment they might be rationally bonded. Central is the process through which agents learn, memorize their experiences and orient their search capabilities to gain more knowledge. RBL also contributes to students' learning through the communities of practice, considering team and group work. Amin and Cohendet (2000:106) also found that the perils of failure at every turn are avoided through the daily interplay between procedural and recursive knowledge among individuals and groups.

One of the main aims of RBL in higher institutions is to facilitate learning effectively, so learning is the core of RBL. A View of RBL learning ecologies forms another perspective or learning for Wenger (Amin & Cohenbet, 2000:107), through continuing practice, drawing on social energy and power generated through interaction in joint enterprises. Wenger (in Amin & Cohendet, 2000:107) identifies three infrastructures of learning in which RBL can make significant changes for the future learning ecologies in higher education around the world: (i) *engagement*, which is composed of three dimensions: mutuality (supported by such routines as joint tasks and interactive spaces); competence (supported by training, encouragement of initiatives and judgment); and continuity (supported by memory locked in data, documents, files as well as memory unlocked by storytelling, and intergenerational encounters). (ii) Alignment, composed of convergence (facilitated by common focus, shared values and leadership); co-ordination (helped by such

devices such as standards, information transmission, feedback and deadlines). (iii) Imagination, composed of: orientation (helped by visualization tools, examples, explanations, codes, organizational charts); reflection (supported by retreats, time-off, conversations, pattern analysis, and explorations (facilitated by scenario-building, prototypes, play, simulations and experimentation).

As RBL emphasizes collaborative learning and promotion, unlike the traditional teaching methodologies which stressed individual learning and learning. CER also emphasizes equality of students in learning, amongst the communities that had capabilities and abilities to structure and restructure their learning ecologies. Therefore, learning is critical for individuals and communities in managing their spaces of learning, knowledge and information. However, Marsick and Watkins (2003:133) stated that continuous learning at the individual level is necessary but not sufficient to influence perceived changes in knowledge and financial performance. They continued that learning must be captured and embedded in continuous systems and practices, and regularly used to intentionally improve changes in knowledge performance. RBL uses different tools, such as computers and human themselves. Asada, Uchibe and Hosada (1999:277) noted that learning methods in multi-agent environments require a well-defined state space for the learning to converge, therefore a modelling architecture is required to make reinforcement learning applicable.

Universities and schools are spaces which enable students to engage effectively with their ecologies or spaces. Because the universities physical structures are visible and conducive, they have a meaning to students and make the context applicable to both teaching and learning. Asada et al. (1999:277) reported on a vision-based reinforcement learning method for acquiring behaviours in dynamic environments. Also, this method finds the relationships between the behaviour of the learners and other agents through interactions (observation and actions) using the method of system identification. However, O'Dennell and Henrikson (2000:90) stated that in the modern age, science, technology, finance, business, government and society are interconnected in a complex adaptive global system, at least in the developed world, and cannot therefore be comprehensively analysed separately.

RBL can make a change in educational settings through the use of new paradigms and epistemologies, and develop new thinkers in educational research. The contribution of CER and RBL is a view of teaching and learning from critical perspectives that seek to unravel the mystery of truth through their own understanding. It is important to note that emancipation and transformation are better ingredients of sustainable learning than the conservative thinking or approach to learning. RBL and CER bring about changes in educational research, as a shift from quantitative to qualitative and vice versa, whilst also bringing about freedom in critical thinking of the students, without fear or anxiety of the dominating character or authority.

Educational research using CER and RBL can challenge and change the dominant, economic social and political discourses, questioning the status quo to make changes possible for the RBL through CER in educational settings. Change is also reflected in conducting research as the researcher using CER is not a dominant figure or 'master', but the participants in the study are given freedom to reflect and practically engage in the research activities. RBL and CER have made changes when studying or in applying scientific method in teaching and in research from natural science to social science and vice versa, thus contributing to knowledge creation and striving for truth in education, not as a singular or objectivity factor but multifaceted. RBL and CER have brought changes and had the potential for bringing the changes in the future in creation of sustainable learning ecologies in higher education. They have changed the mentality of researchers and academics alike by arguing that research methods and tools are not or solely technical but show that another element of research society has power, and social inequalities can be redressed. The dominant discourses can be challenged in educational settings.

Based upon the abovementioned views, O'Donnell and Henrikson (2002:89) in their study "*Philosophical foundations for a critical evaluation of the social impact of ICT*" challenged the dominance of purely instrumental views and suggested directions towards a post-foundational grounding on which a critical neo-humanist evolution of the social impact of ICT could be conducted. This challenge makes one think of alternatives of approaching research and creation of knowledge, again in line with RBL and CER ideas (alternative reflect change). They posit that societies (students, learners) have experience of their ecologies and social organizational structures,

better understood by them than by an outsider (researcher or a dominant character without the contextual knowledge of the communities at present). The history of the society is best known by the society from its own context and perspectives. Regarding this factor, O'Donnell and Henrikson (2002:90) stated that historicism in social structure, events and texts are best understood in the context of their historical development. Communities will be the ones which best know their history, frustrations, weaknesses and strengths.

In RBL and CER, theory and practice (praxis) are taken into serious account. Students are encouraged, motivated to participate by acting (action) and applying the theory in their respective practice. Kaipainen et al. (2012:262) agreed that the conditions of learning have changed and that instead of it being mainly an individual effort in a clear-cut and teacher-defined learning space along the same path, shared by all students, learning has moved towards being simultaneously autonomous and collaborative, as RBL is proposing, taking place in a dynamically changing environment, as CER and RBL are capable of. RBL can make changes in maintaining learning ecologies, and Kaipainen et al. (2012:262) add that, whether in formal or informal settings, learners can follow their personal learning paths while being simultaneously guided by the community of learners who collectively shape and change the learning settings. However, supporting this view on bringing change in education and learning to higher education, John Aber stated that:

Once students begin to develop certain practical understanding through the use of writing, it can be very short leap into emancipatory realm. For instance, a writing an assignment that ask students to describe their writing histories can easily go beyond mere description once students believe they have the right to open a dialogue with those who may have had control over classrooms in which that history was shaped and actually lived.

RBL and CER change this perspective of rigid classroom histories to which students were subjected, and the known life changes improved. Equal in nature, students are also free to engage in an open dialogue in a classroom that is under control but not dominated. In group discussions, students are free to use the personal pronouns "I", "we", "us", whereas in the traditional teaching methods they were subjected to write what the authority (teacher or book) said without question or raising their own

proposals or opinions. RBL students are free and in CER are viewed as equals and having the potential for critically questioning the content of their study. This study is using the focus groups, in this case RBL and CER, to bring about changes in understanding the “objectivity of the truth” and so better understand social realities using critical methods of enquiry.

2.14.1 Challenges in implementing changes

Although RBL and CER are recommended in this study there were challenges to be faced in the creation of sustainable learning ecologies in higher education, notably the *empirical* challenge, which arises because RBL should be implemented by the people who are eligible and have training to execute their work. Practical application would be a problem if no tools were provided and no necessary skills shown by the learned individuals. With both industrialized countries and developing countries, a divided world presents *economic* challenges, with allocation of resources affected negatively or positively. Capital is needed if RBL implementation is to be successful, and as the World Bank report (2003:76) found that countries need to ensure that any system of financing will be sustainable in the long run. RBL must be financed or resource-based learning will not materialize in high schools.

2.14.2 Policies

Different institutions have different policies, some of which are rigid and conservative whilst others are democratic. Some states and institutions use the policy structures to dominate and control their political or ethnic opponents, which presents an obstacle to the implementation of RBL. Political parties and educational systems have either a negative or positive impact on the implementation of RBL, usually comprising a group of people clustered together to support a particular policy or organization. According to Bennet and Howlett (1992:280) such coalitions perform most of the functions usually associated with interest groups in pluralistic analysis, and are linked together by policy brokers, whose dominant concern is with keeping the level of political conflict within acceptable limits and with reaching some

reasonable solution to a problem. Brown (2010:103) reported differences between institutions with different missions, some urban and teaching-focused.

2.14.3 Philosophical underpinnings

Schools of thoughts and different ideologies can be a challenging point for RBL implementation as conflict will arise between some communities, at which point individualism comes into conflict with collaborative learning. Philosophical underpinnings vary according to communities and individuals, with something that is highly regarded by one person not finding favour with another. People are different, as are their ideologies, belief systems and affiliations, therefore this factors can affect either positively or negatively the implementation of RBL in higher education.

2.14.4 Migration

As RBL is practicing democratic principles in the learning environment some countries in Asia and Africa which do not practice democracy will face a challenge to use and implement it in higher education. Because of various issues, such as religion, politics and ethnicity, professionals who are knowledgeable in the implementation of RBL might migrate. The World Bank report of (2003:13) stated the migration, especially of highly skilled people, can damage the source country and the loss of people who provide vital public services, especially doctors, information technology specialists, and teachers can retard low income countries' development, even if the number of emigrants is small. It is important to note that RBL requires skilled individuals to implement it, so migration can be a threat.

2.14.5 Culture

Most of the abovementioned studies cited in this research document did not highlight the crucial involvement of culture of different groups, ethnic groups, and different societies in using RBL. Khan and Sobani (2012:122) did however note that

students in a new learning environment may be hindered in their interaction with fellow students by social or ethnic background. The influence of others is crucial and people are influenced by others in many ways, for instance, with some cultures allowing interaction with different age groups and genders and others not.

2.14.6 Governance

Pahl-Wostl (2009:354) found evidence that many problems are not primarily associated with the resource base but have to be attributed to governance failures, impacting on both developing and industrialized countries through corruption and absence of civil society, inefficiency and ineffectual structures. Overregulation and inflexible bureaucracy, coupled with sectoral fragmentation and dominance of economic priorities prohibits strategies from being implemented without a certain level of control, needed for RBL to function. Excessive control can jeopardize the independence and freedom of students on the learning programmes.

2.14.7 Knowledge management

Bharadwaj (2000:175-176) stated that effective knowledge management is an inherently social process that requires great organizational change. Poor knowledge management in implementing RBL is a challenge and creating a culture of knowledge management entails changes to the organizational structures and communication systems, and if proper knowledge management is not practiced then RBL may encounter serious challenges in its implementation.

2.15 USING RBL TO CREATE SUSTAINABLE LEARNING IN HIGHER EDUCATION

Used to create sustainable learning and durable over the long term, RBL follows a democratic and collective approach that allows all people to participate in their activities. However, for Cortese (2003:16) a change in attitude is necessary if the

vision of transforming education at all levels is to be achieved and sustained. In this study it is proposed that RBL tools can be of importance in helping social and student populations in new teaching methods, focusing on higher education, which Cortese (2003:17) argues has unique academic freedom and a critical mass, with diversity of skills to develop new ideas, to comment on society and challenges, and engage in bold experimentation in sustainable living.

In creating sustainable learning and education, RBL can be a valuable asset and a tool to help both students and learners in educational settings. Rachelson (2014:3) states that sustainability education cannot only be theoretical but must also be applied. In this case the application procedure shall be implemented by using RBL, which is sustainable in education not through reading and studying alone. Rather, students have to experience it through implementation of a set of skills and personal attitudes. Sustainable education should instil the skills of adapting, cooperating, solving problems, thinking systematically, connecting with others, networking, applying the precautionary principle, understanding the impact humans have on the environment, communicating across-cultural boundaries, and exhibiting fortitude. Its assumptions involve students as active participants in their study, to build verbal reasoning skills, decision-making and problem-solving skills. RBL is an appropriate pedagogical tool that can be used in teaching and learning ecologies.

For the system in which teaching and learning is applied, RBL allows students to freely demonstrate their potential and abilities. The human nature of students is well exposed and their contribution is valued and respected in their learning ecologies. Rachelson (2014:7) posits that if a faculty decides to use sustainability it must consider an appropriate pedagogy to present sustainability content, and promote attitudes that not only increase knowledge but also ultimately lead to behaviour change. If one looks at CER and RBL as appropriate approaches to education in this current age, theoretically and practically they can be used in various multi-disciplinary modules, for example, biology or mathematics, and more technologically advanced modules. Using CER as a theoretical framework helps in understanding the theoretical basis, whilst RBL can be a teaching strategy and a tool to advance changing educational systems. RBL and CER had one common purpose in this study, that is, to improve people's lives. Hopkins (2012:2) supported the strategies of changing people's lives by delivering acceptable learning

objectives at all levels, through changing strategies to harness the potential of education through enhanced public awareness and training programmes.

2.15.1 Individuality or collaboration

According to Cortese (2003:16) designing a sustainable human future requires a paradigm shift toward a systematic perspective that emphasizes collaboration and co-operation. Much of higher education stresses individual learning and competition, hence many higher education curricula tend not to ask students to challenge the following assumptions: (1) humans are a dominant species and separate from the rest of nature; (2) resources are free and inexhaustible; (3) the Earth's ecosystems can assimilate all human impacts; (4) technology will solve most of society's problems; (5) all human needs and wants can be met through material means; and (6) individual success is independent of the health and wellbeing of communities, cultures and life support.

Livingstone and Lynch (2000:343) found that in group work or collectiveness students were challenged to reflect upon their learning approaches, as they came into contact with colleagues with alternative approaches or viewpoints. RBL can be used to challenge the psychological strengths of the learner and applied to learner-centred ecologies. For Greenhow, Dexter and Riedel (2006:6), such environments focus on learners, building on their strengths interest and needs.

2.15.2 Systems v/s Ecosystems

Systems theory entails identifying aspects that can be used to create an atmosphere of social justice and emancipation to the social structures and student population. According to Capra (1998:4) it entails new ways of seeing the world and of thinking, known also as 'system thinking' or 'systemic thinking'. For Watson and Watson (2011:65-66) it entails identifying the components that make up a system, understanding relations between them, and finding how these impact on the larger system, external systems, supra systems, and vice versa. RBL in this case can be used as it propagates all components of learning, for example, students and their

environment. According to Watson and Watson (2011:64) this view of systems is particularly valid for the field of education, in which many researchers are focusing on critical emancipatory research and employing multiple methods for the proper exploration of diverse topics.

2.15.3 Sustainability or sustainable development?

“Many scholars recognized the need for institutions that promote learning in the face of complex and uncertain problems” (Henry, 2009:131). Based on this statement it is necessary according to me that learning be promoted, it can be promoted by new approaches to learning like RBL, Project Based Learning, and Blended Learning etc. According to (Kates et al, 2001; Clark, 2007; in Henry, 2009:131) the emerging field of sustainability science provides a fresh perspective on learning because of its focus on several major learning challenges in environmental policy and sustainable development.

In this study the concepts environment and ecology are used interchangeably – as the main focus in the learning ecology of the students in higher education. My own view of learning is that learning has the interacting components which include: (1) social learning, (2) personal learning, (3) communal learning, inter-intra learning, (4) global learning, and (6) environmental learning. According to my view and observation sustainable learning ecologies is composed of different pattern that interact forming a system. This system consists of elements which are progressive or developmental in nature.

This study intends to create and highlight the creation of sustainable learning ecologies using modern technology and methodologies, however, these concepts are vital in securing change in higher education, transformation, change, sustainability and democracy. For all of these concepts to materialize and be applied practically, theoretical alienation and praxis should be used. Moore (2005:79) noted that many academics argue that knowledge production and the consequent transfer of knowledge from experts to layperson (or professors to students) is a significant role of the university. From the abovementioned views it is evident that creation of

sustainable learning ecologies will fail or is failing, therefore new approaches such as RBL are needed for the creation of sustainable development in higher education.

2.15.4 Theory or Praxis

Traditional pedagogies were in the form of instruction and following, with students having to read the notes and books, and memorize the information. This was a form of learning acceptable at that time and context but currently, RBL is used to introduce both the teacher and learner to a complementary nature of theory and praxis. In explaining the relationship between the two, Johnson and Maiquashca (1997:28-29) found that the theorist takes a supportive but at least partially autonomous and critical approach vis-à-vis the addressee. Theory is not only a scientific or philosophical exercise but also a politico-normative one which has practical intent.

2.15.5 The role of technology

Cortese (2003:18) wrote that understanding how the natural world works and learning how to have human technology and activity mimic and live within the limits of natural systems are crucial to education for the 21st century, particularly the following:

- The context of learning will change to make the human environment interdependent, with values and ethics. Students will understand that they are an integral part of nature. RBL had the potential for facilitating ecosystemic learning through engagement and collaboration.
- The process of education will emphasize active, experiential, inquiry-based learning and real-world problem-solving on the campus and in the wider community.
- Higher education would practice sustainability, a campus practicing its ideals to make sustainability an integral part of operations, planning, facility design, purchasing, and investments, so it ties these efforts to the formal curriculum.

2.15.6 Human nature of students

Cortese (2003:15) has stated that for the first time in history humans are pervasive and dominant forces in the health and wellbeing of earth and its inhabitants. Humans have emotions, feelings, choice and capability, with certain qualities which are exceptional and can add value to the learning environment. If RBL is to be used in the student population it should be taken into account that they are human and not objects at the last receiving end of information, bringing their experiences into the classrooms. For RBL to be used effectively the nature of humanity of students need to be respected. Armitas et al. (2003:146) stated that students differ in their level of interest in subjects they study and thus the level of interest they bring to learning. Use of RBL will rely on student interest and goals. Computers offer the potential to cater for differences in students' preferred learning approaches.

2.15.7 The usage of RBL in psychology

According to Holt et al. (2001:3) the following factors are important regarding the adoption of online RBL in psychology:

Over the past years the teaching of first year has undergone a series of changes due to the difficulties of teaching large numbers of students from diverse backgrounds. Traditional teaching approaches no longer catered for the range of abilities, learning styles, and particular needs of different cohorts of students. Many experience difficulties in learning the key concepts in the course. Content was largely driven by the requirements placed on the Australian Psychological Society (APS), so the extent to which it could be changed to accommodate different cohorts was limited. Instead, staff changed the way the content was delivered providing several options for assisting students to master the subject matter. The rationale for this move to flexible, online delivery was to make the course more accessible for off campus students, enrich the course for on campus students, and develop student's independent, self-directed learning skills.

Elaborating further on the usage of the RBL in higher institution, Holt et al. (2001:4) stated that there were issues to do with the purpose of providing particular resources

and the extent to which students use them. They postulated that the usage should be linked to purpose, however, if students did not know why a particular resource had been provided it was more likely they would not use it productively. Factors listed by Holt et al. (2001:4 of 10) as important in the usage of RBL were that optimum learning resources should be used as intended by the designers and explicitly linked with learning objectives and assessments requirements.

Learners' emancipation and control are given to them by the new developing technologies and different resources. Change is evolving and is practically experienced by the teachers and learners, communities and societies, in political spheres and in the administrative systems of the different governments. This approaches shows sustainability and the sustainable learning ecologies in higher education. Hadjerrou (2010:118) indicates a change from learning environments, in which the teacher and textbook control the learning process, towards the constructivist learning environments, in which the students themselves, not the teacher, control how to learn.

TABLE 2.3: Pedagogical Usability Criteria (adapted from Hadjerrou, 2010:119)

Understandability	Web-based learning resources should provide a well-structured description of the subject information using an understandable language
Learner-control	Learner-control describes the student's ability to control the order in which they would like to perform activities
Goal orientation	Goal orientation relates to the learning utility of WBLRs in terms of the learning goals set by the teacher and the curriculum
Time	WBLRs must allow the students to learn the subject matter within the short, but acceptable, period
Interactivity	Interactivity is supported through easy and user friendly accessibility of the subject information and task-based activities
Multiple representation of information	WBLRs should provide multiple representation of information using various multimedia elements, e.g. text, graphics, images and sounds

Motivation	The material provided by WBLRs should contain intrinsically motivating tasks and examples
Differentiation	Differentiation involves fitting the subject information to the characteristics of the students, taking into account their abilities
Flexibility	WBLRs should provide different levels of difficulty and contain diverse assignments and tasks that are tailored to the students
Autonomy	Autonomy means that students are able to work on their own using WBLRs, without being completely dependent from the teacher
Collaboration	Students can work together to reach a common goal, giving them a sense of how problem solving can be carried out in collaboration
Variations	Students are able to use other learning resources in combination with WBLRs, such as textbooks

When learners work together with resources available and in groups they are motivated, feeling a sense of freedom, and are able to manage diversity amongst themselves. In this fashion the authority shows respect for the learners as they are not underestimated. The authority shows confidence in the individualism of students and their ability, but under careful support of a knowledgeable person, the lecturer.

RBL can be used as a method of teaching and learning, pedagogically in such a way that it should be understandable to the students. Keeping the subject matter in a simple form is more appropriate than using jargon which students find difficult to understand, hence material-based learning, project-based learning and RBL assignments can be completed within a reasonable timeframe. Students' understanding of their project would be motivated to engage, interact, and work collaboratively. Students are provided with different information that needs different resources, a good indicator of the usage of RBL in creating sustainable learning ecologies in higher education.

2.16. SUMMARY

In conclusion, students and their teachers are both human, and in Paulo Freire's view (as cited in Schenck et al., 2010:72) there are two groups of people in any

society, the oppressors or invaders and those oppressed or invaded. The oppression gradually takes place directly and indirectly through explicit and implicit messages from the oppressors. This study aims to show that students have the capacity to think critically and abilities to act upon factors that are in their surroundings. Communities and students can function effectively if they are given equal opportunities and resources, and given time and space those who are able to complete their task with enough resources can perform better. Even though it is highlighted that resource-based learning is not a new field, it is a good approach to understand the global world. In this chapter the emphasis was on the students' use of resource-based learning in creating sustainable learning ecologies. Also, history was important in this chapter as some of the major proponents of CER were shown and their beliefs formed building blocks of the theory. The proponents, including Popper, Lewin, Habermas, Honneth and Freire, proposed equality, positive life, communication / dialogue, change in societal structures and in personal life. Sustainability as the concept that shows stable progress and development is roughly emphasized in this study, especially in higher education. People are not objects but rather are active and knowledgeable, with personal experiences.

The following chapter examines the method and research design of the study as the researcher focuses on emancipation and freedom of the student population.

CHAPTER 3

RESEARCH DESIGN AND METHODOLOGY FOR DATA GENERATION ON USING RBL IN CREATING SUSTAINABLE LEARNING ECOLOGIES IN HIGHER EDUCATION

3.1. INTRODUCTION

The main aim of this research study is to use resource-based learning to create sustainable learning ecologies in higher education. This chapter will describe the research design and methodology, the critical research approach which is linked to CER framework. Description of participants and facilitators are also highlighted with the step-by-step process of the research.

3.2. CRITICAL RESEARCH APPROACH

The researcher found the relationship between the theoretical framework of CER and critical research as an appropriate approach to understanding and investigating the use of RBL in creating sustainable learning ecologies in higher education. Whilst Stahl (2006:83) argues that there is no agreement of what truth is, if one can achieve equality and emancipation for the learners in higher education there could be justice. In line with the principles of CER, the participants are accepted as individuals with prior experiences, knowledge and freedom, Using CER as a framework and Critical research approach, the purpose is to emancipate the students from suppressive educational systems. Critical research aims to change the status quo and leads to emancipation of the people and the marginalized. I also reiterate that where there is suppression and domination there is no truth. If the educational systems of countries are suppressive then the systems are unjust and no truth exists.

Critical research has its roots in the Marxist critique of capitalism and it is based on the perception that the current status quo is unjust (Stahl, 006:87). In my observation and opinion what is unjust is the dominating character of teachers and lecturers on students, unequal distribution of learning resources, and poverty. The basic roots of critical research can be highlighted in Karl Poppers's work, seen by

Ulrich (2006:3) as showing that “the power of science consists not in its providing security against failure but in its critical method”.

This research project aims to democratize learning ecologies, CER and critical research approach are vital tools of education and learning as both facilitate, empower and change the societal discourses: “CER has an agenda to critique and challenge, transform, empower, and it is geared towards social justice and enhances the principles of democracy” (Nkoane, 2012:99). Some of the main applications of critical theory, according to Sudersan (1998:253) are:

- There is no absolute knowledge and the incidence of the subject and object lies in the future, not merely due to intellectual progress in which the relationship between the subject and the object is redefined
- The method of science is different because the ends determine the means in their case, whereas in the case of critical theory the means are equally important as the ends. The method of abduction is employed.
- It is a critical reflection on ideology and it accepts that as a historically grounded method it is not free from the influences of the societal framework
- It also realizes the importance of praxis and reposes faith in the cherished Enlightenment ideals of freedom, justice and happiness.

The above clearly indicate that truth and knowledge can be obtained from different viewpoints or perspectives, from qualitative science and quantitative science. Theory and practice work towards one objective, that is, true science, therefore critical theory and qualitative science also contribute to science. In relevance to this study, without numerical explanation of learning ecologies, participants are given freedom of expression and shown dignity and respect. Societal patterns and structures play a role in using resource-based learning to create sustainable learning ecologies.

Watson and Watson (2011:63) stated that qualitative research is inherently critical, interpretive, and multi-methodical in function:

This highlights the task at hand for qualitative educational researchers, and their responsibility in bringing a critic view to methodology, promoting social

justice, and engaging with systems of education by seeking to identify and address the problems with them

Social justice is vital for the survival of societies, and students have rights, whether personal rights, national, international rights. Educational systems that do not acknowledge learners' or students' rights are undemocratic, unequal and unacceptable. This study seeks to uphold the rights of students as potential contributors to the development of democratic society.

According to Mapotse (2014:502) the basic purpose of critical theory is emancipation and self-determination. In choosing critical research as an approach, I aimed to help empower students and learners to take responsibility for their education and learning processes. They may have limited knowledge and experiences that they bring to educational systems, but the social structures and patterns are known better by them students than by researchers and teachers or lectures.

In this case ecology is vital as is the process of interaction, socialization and manifestation of societal patterns. Critical research as a multifaceted approach also entails innovation, knowledge-creation and philosophical assumption in changing society. CER has the intention of been critical to dominating discourses in communities. Habermas proposed that the dominant view of knowledge formation held by different individuals and groups appears to cause them to act in distinctive ways (Smyth, 2006:1). The dominant discourse had an influence on students' learning and actions, in technical ways, as they are oppressed by the dominating discourse and structure of their own societies. Education is not static but changing, because of the new breed of learners and students and new global technological developments. Therefore, critical approach in this study played a key role in advocating equal rights in educational systems. Unlike capitalism, which is embraced by the elites, education should encourage critical discourse amongst the societies.

As stated by Smyth (2006:2) Habermas proposed three dominant views, which he called 'knowledge-constitutive interest', characterized by the position which an individual's takes in relation to his or her actions in particular social environments. This view is summarized in the table below:

Table 3.1: Habermas's knowledge-constitutive interest (Adapted from Smyth, 2006:2)

Dominant interest	Characteristics of action	Locus	Example
Technical interest	Action on the environment	Control	When people and practices are thought of as objects to be controlled and manipulated to achieve a desired outcome
Practical interest	Action with the environment	Understanding	Meaning making is crucial. Action is based on considered judgment about people and practices
Emancipatory interest	Autonomy from the environment	Freedom from ideology	Critical insight has the potential to release individuals from dogmatism and empower to take control of their lives in autonomous and socially responsible ways: they act collectively from authentic insight in ways that are moral, challenge ideology and imply justice and equality

The dominant interest usually occurs in a technical sense when the administrators rule the people through policy and government incumbency. This is an oppressive way in which people are denied freedom, including policies practically used to oppress students. After all this is an unjust practices and students are not treated fairly. Critically questioning the system can equip people to develop independent skills that are suitable for survival, hence my use of critical research and CER as guiding principles in this research project.

According to Kathy (2000:3) critical theory focuses on the oppression of the individual, the group, and of security by self-imposed externally imposed influences. In order to emancipate people on all three levels of oppression, people must engage in a critique of personal, situational, and historical forces which cause oppression. As with CER,

...critical approach focuses on the abolish of the social injustice, the justice is shown as necessary and indispensable, the emancipatory paradigm looks for the social change, focused on the freedom and realize, both in the process of the society itself, and it accomplishes with three characteristics:

to include the experiences of the researcher in the research questions, the objectives of interest and the strategies for changing its conditions. (Elizondo, Alberto, Zavala, Sanhuenza Alvarado, Suazo & Veronica, 2000:424)

3.3. CO-RESEARCHERS

The co-researchers were sourced from the University of the Free State in South Africa. First-year Psychology students, most were enrolled on a Career Preparation Programme (CPP) and registered for a BA in the Humanities faculty. Numbering ten, they comprised five females and five males, and participated without any interference from extraneous variables such as uninvited guests or telephone interruptions. This first-year Psychology module its (official code SIL 108) involved four lecturers and one coordinator.

3.4. FACILITATORS

The facilitators were lectures responsible for offering this introductory cause of Psychology. Three were registered with HPCSA, a professional body, and all had wide experience and more than five years lecturing at the university. This was appropriate for the study as they possessed experience of the higher education environment.

3.5. THE RESEARCHER'S BACKGROUND

The researcher, I had 12 years of teaching, three in private school and nine in higher education. My interest in higher education was based on the support systems that students received from the lecturers and interest in rural education, critical theory CER and RBL as facilitating sustainable learning ecologies. Although I have a MA in Research Psychology it was useful to conduct research on new qualitative methodologies that were previously seen as unscientific in educational research.

Being in the higher education sector I realized the need to conduct research based on supporting students in their learning ecologies, support which is based on

interactive participation between the students and lecturers. It is important for the university management and lecturers to provide quality education and learning through equal distribution of learning resources.

3.6. USING RBL IN CREATING SUSTAINABLE LEARNING ECOLOGIES

The main aim of this research is to understand how RBL can be used to create sustainable learning ecologies. One needs to understand that education and learning is different. In this study understanding RBL is discussed with related literature and understanding the creation of sustainable learning ecologies can be understood through the interplay of different theories with similar intention, such as PAR, critical theory and CER, but the emphasis is on CER as a theoretical framework:

Social learning was taken into account in new approach called participatory based social simulation, again participatory agent based social simulation deviates in a number of ways from conventional modelling (Pahl, Wostl & Hare, 2004:193).

It is known that education and learning change rapidly around the world, with old-fashioned methods being replaced by new ones, such as RBL, that facilitate and offer effective and quality education. In RBL the five types of self-initiated learning are finding text-based information sources; creating new interactive contexts such as projects; pursuit of structured learning opportunities, such as courses; exploration of media; and development of mentoring or knowledge-sharing relationships (Barron, 2006:193).

RBL “operates on the premise that learning can be facilitated with access to information organized around a specific domain that learners can actively explore” (Davis & White, 2001; in Greenhow, Dexter & Riedel, 2006:5), but learning itself is complex, and its complexity requires multiple methods and utilization of all stakeholders, including the learners or students. Greenhow et al. (2006:6) stated that RBL environments (ecologies) are most likely to be effective when they are designed and utilized in ways consistent with the research on how people learn.

Greenhow et al. (2006:6) listed four dimensions or environments that can be visualized as independent and overlapping spheres, therefore we might expect all four dimensions to be present and functioning in a quality learning environment:

- Knowledge-centred environments – focus on developing knowledge of the field or discipline and of strategies to develop expertise. They incorporate the language, artefacts and essential principles on which learning in the discipline is based and model how experts work with those principles to gain increased understanding
- Community-centred environments - evolve a community of practice among like-minded professionals where members develop common goals and work toward achieving them
- Assessment-centred environments - support learners testing of ideas by promoting ongoing reflections and feedback on practice
- Learner-centred environments - focus on learners building on their strength, interest, and needs. They take individual learning styles and prior knowledge into account.

Whilst RBL can bring about innovation in learning, however Ryan, Wells, Freeman and Hallan (1996:97) stated that staff engaged in this approach needs to be able to redesign and evaluate curricula, understand new learning technologies, employ them appropriately to construct a range of learning and assessment activities that meet the outcomes, design teaching and learning materials, provide tutorials support, and operate effectively in teams.

The core function of RBL in this study is to understand learning across different ecologies: "...defined as the set of context found in physical or virtual spaces that provide opportunities for learning" (Barron, 2004, in Barron, 2006:195). It forms the systemic learning process whereby learners' experience and knowledge is taken into account. According to Barron (2006:196) there are cross-context links, such as the relationship between teachers at school and parents at home, that may also influence development. Some developmental theorists went further and acknowledged that persons can play a role in their own development.

3.7. WORKING WITH THE FIRST YEAR CO-RESEARCHERS

As researcher I did not find it easy to work with the first-year students (co-researchers) but I realized that they were more dependent on lecturers than being independent. When asking a question I established a rapport first to make the co-researchers relax and alleviate fear or anxiety so to get fair and objective responses. I saw rapport as a support to the co-researchers: “development assistance can facilitate group participation and democratic decision making” (Butler & Mazur, 2007:608).

During the individual interviews (face-to-face interviews), co-researchers were relaxed and appeared interested but during group interviews I took the stand of moderator, with participants taking an active part in discussions and responding to questions. As found by Stahl (2006) conversing among peers in a comfortable setting with limited moderator prompts may result in more information about organizational issues, knowledge structures and interacting with the users.

3.8. SESSIONS

Sessions were compartmentalized or scheduled according to a suitable timeframe, at times convenient to the participants so as not to impede or interfere with other modules which the participants had to attend. The researcher had booked the venue as the interviews were conducted within the vicinity of the University campus. Times and priorities were set to facilitate smoothly the empirical data generation. Zerihun and Krishna (2012:33) listed the set of priorities which are important when conducting qualitative research:

- Decide exactly what one wants
- Write it down
- Set a deadline for achieving the goal
- Organize the list into a plan/ execution of plan
- Take action of the plan immediately
- Resolve to do something every day that moves one toward the major goal.

3.8.1. Pre-session

It was important to brief the participants about the research project, therefore a pre-interview session was scheduled in which were discussed six critical factors of concern: (i) I introduced myself by stating my intention of the study and detail my institutional affiliation. I also introduced the topic. (ii) I stated clearly that there was no third-party sponsor with an interest, except the University and that it had been made possible by financial support from the National Research Foundation (NRF). (iii) I provided a general explanation of the topic, including terms with which the participants might not be familiar, (iv) the main aim and objectives of the study were outlined. As researcher I reiterated that their responses and identities would be known only to us, with confidentiality a serious consideration, (v) I explained to the participants how their information or the research report would be handled and told them that if the full thesis were to be used in national or international conferences their personal identities would remain anonymous, (vi) if they needed to shift the appointment for the interview or days it would be allowed because they should not be coerced.

3.8.2. Discussion schedule

Use of time differs according to individuals, so the convenience for participants' in providing input was taken into consideration. Table 3.3 (below) shows the timetable for sessions, scheduled over three months, with three sessions for the first month, two sessions for the second, and five sessions for the third. This allowed for intervals so the participants could engage in the extra-academic work. This was so the project would not interfere with their personal projects.

Table 3.2: Planning Schedule

January 2015	Day		
Session 1	1	Pre-interview with the group	Venue (booked)
Session 2	2	Group meeting	Venue (booked)
Session 3	3	Group meeting	Venue (booked)
February 2015			
Session 4	4	Group meeting	Venue (booked)
Session 5	5	Group meeting	Venue (booked)
March 2015			
Session 6	6	Face-to-face interview (individual interview)	Venue (booked)
Session 7	7	Face-to-face interview (individual interviews)	Venue (booked)
Session 8	8	Face-to-face interview (individual interviews)	Venue (booked)
Session 9	9	Face-to-face interview (individual interviews)	Venue (booked)
Session 10	10	Face-to-face interview	Venue (booked)

Time allocation was between 15 and 20 minutes for individual interviews and group interviews. A 'group meeting' was held with the whole group of participants and 'Venue (booked)' reflects an official booking of the venue as there were many activities occurring on the campus. All the participants attended the sessions as planned.

3.9. PRAXIS PLAN FOR THE RESEARCH

With thoughts, passion and willingness to complete the research project, one element which is vital is feasibility and practicality of the research project to be continued and be completed. In executing this research project within the

reasonable timeframe, with all practicalities involved, the following factors were stated as playing a critical role:

- Time: researcher and participants set a timeframe to be respected by both parties.
- Consultations: The researcher had been in consultation with the supervisor to provide updates of the study.
- Venues: According to the University rules, where the research has taken place venues had to be booked before use. So we managed to use the venue as agreed.
- Ethics Committee: The UFS Research Ethics Committee in the Education Department stated that “The approved ethical number shall not be used for over three years.” This implies that strategic practical work of the research took place.

3.10. OVERSEEING THE RESEARCH PROJECT

To ensure the research project met its priorities and timeframes it had to be monitored, based upon realistic strategic planning of sessions, aims and objectives, most importantly commitment to the project itself. It was agreed between the researcher and the participants that I would make a follow-up calls to remind them about the appointments. The time schedules of the sessions were printed and given to the participants. I also kept the study leader informed about the progress of the interviews or meetings with the participants. The researcher and the participants decided to use Zerihun and Krishna’s (2012:33) principle of **Proper Prior Planning Prevents Poor Performance** to save time.

3.11. DATA GATHERING INSTRUMENTS

Data was collected through the use of an electronic tape recording device, simple to use and play back using the three buttons located on the front. This was suitable for recording files which are available and had the advantage of enabling information to be transferred to a memory stick and computers. The participants were notified

that it would be used and they unanimously consented. They said it would not influence their responses or communication. Importantly, communication was the most powerful instrument as all the parties involved were able to gather data. The researcher also took extra caution by taking notes to back up the device.

3.12. DATA GATHERING PROCEDURE

The tape recording device was used to collect data generated through the interview process and because the interviews were conducted in English no translation of data was required. Although English was a second language the researcher encountered no language problems. As Sandelowsky (2000:338) stated, data collection in qualitative descriptive studies is typically directed toward discovering the *who*, *what* and *where* of events or experiences, and their basic nature and shape, with the choice of an increasing array of theoretically and technically sophisticated methods. Face-to-face and group interviews were used.

3.13. ANALYSIS OF THE DATA

Using CER required a precise analytical method, related to the intentions of the study and qualitative methodology. Because of its relationship to critical research the analysis used was critical discourse analysis (CDA). Fairclough (2012) stated that the term 'discourse' is used in various ways within the broad field of discourse analysis, as a category for designating particular ways of representing particular aspects of social life, for example, disadvantage and poverty. According to Janks (1997:329) CDA stems from a critical theory language as a form of social practice, with all social practices tied to specific historical context by which existing social relations are reproduced or contested and different interest served. As Forchtner (2010:18) stated, "CDA has different approaches to understanding critiques in different ways, due to their different underpinnings and critiques. Hidden power structures should be revealed, inequality and discrimination fought, and the analyst's own position reflected upon so as to make the standpoint transparent".

Wodak and Meyer (2001:1-2) stated that CDA takes a particular interest in the relation between language and power, and is used to refer more specifically to the critical linguistic approach of scholars who find the larger discursive unit of text to be the basic unit of communication: "CDA may be defined as fundamentally concerned with analysis opaque as well as transparent structural relationships of dominance, discrimination, power and control as manifested in language". The

According to Wodak and Meyer (2001:5-6) outline the basic assumptions of CDA as follows:

- Language is a social phenomenon
- Not only individuals but also institutions and social groupings have specific meanings and values that are expressed in language in systematic ways
- Text are the relevant units of language in communication
- Readers / hearers are not passive recipients in their relationship to text.

Wodak and Meyer (2001:11) noted the importance and the value of CDA in educational research:

An important perspective in CDA is that it is very rare for a text to be the work of any one person. In texts discursive differences are negotiated; they are governed by differences in power which are themselves in part encoded in and determined by discourse and by genre. Therefore texts are often sites of struggle in that they show traces of differing discourses and ideologies contending and struggling for dominance

For van Dijk (1993:249) there were many directions in the study and critique of social inequality, and approaches to questions and dimensions focused on the role of discourse in the (re)production and challenge of dominance. In this study, outdated educational systems had failed the student, so the teacher or lecturer was the sole owner of the knowledge whilst the students depended on the lectures for the learning to occur. From the principles of CDA, van Dijk (1993:249-250) defined dominance as the exercise of social power by elites, institutions or groups, resulting in social inequality, including political, cultural, class, ethnic, racial and gender inequality. The lecturers, by not providing freedom of expression amongst the students, were dominating the learning spaces, that is, the platforms of academic

expression and emancipation in higher learning institutions. According to (Fairclough, 1989, 1995, in Janks 1997:329), the model of CDA consists of three interrelated processes of analysis which are tied to three interrelated dimensions of discourse:

1. The object of analysis (including verbal, visual or verbal visual text)
2. The processes by which the object is produced and received (writing/speaking/designing and reading/ listening viewing) by human subjects
3. The socio-historical conditions that govern these processes.

Each dimension, according to Fairclough, requires a different kind of analysis:

- Text analysis (description)
- Processing analysis (interpretation)
- Social analysis (explanation).

To demonstrate how to use this three part-analytical model in working with a text the following figure depicts dimensions of discourse and discourse analysis:

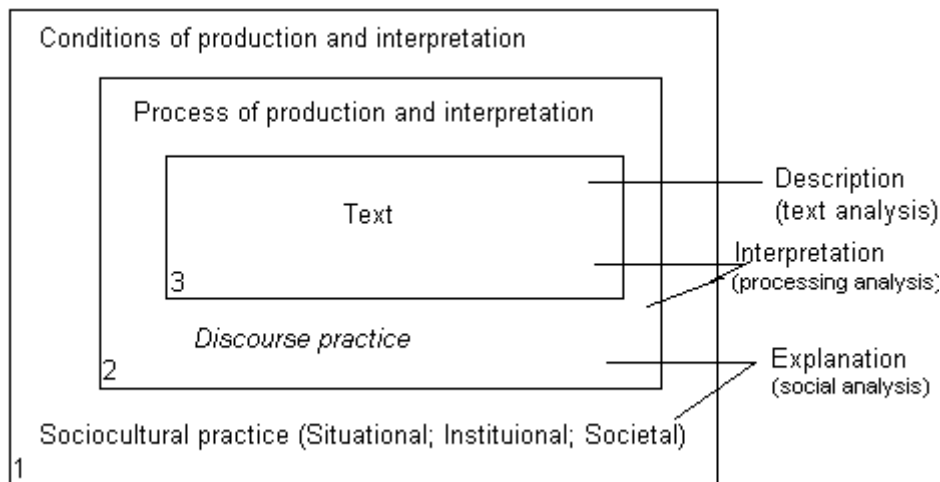


Figure 3.1: Fairclough’s dimension of discourse analysis (Adapted from Janks, 1997:329-330)

Analysis is not always as tidy linear (Janks, 1997:330), so the embedding of the boxes emphasizes the interdependence of these dimensions and the intricate moving backwards and forwards between different types of analysis. This three-dimensional image enables one to understand that an analytical move to examine

a single box necessarily breaks the interdependence between the boxes and requires subsequent moves which re-insert that box into its interconnected place. She further mentioned that the focus of any one box, therefore, has to be seen as a relatively arbitrary place from which to begin an analysis.

According to Janks (2005:100) CDA allows the analyst to focus on the signifiers that make up the text, the specific linguistic and visual selections, their juxtaposition, sequencing, and their layout. On the other hand, it is important for the researcher to take into account the previous experiences and historical background of the participants, because their discourse lies within the social structures of the particular society.

3.14. RESEARCH SITE: UFS QWA QWA CAMPUS

In the document *UNIN to UFS – 25 years*, Rodney Moffet noted that in 1959 the South African government had established racially exclusive universities for Blacks people in the country. UFS Qwa Qwa campus is a historically disadvantaged Black university, with a campus situated in the North-Eastern corner of the Free State, and comprising three parts: the old Witsieshoek Native Reserve of 655 square kilometres, expropriated from White farmers, and the Qwa Qwa National Park of about 200 square kilometres. The USF Qwa Qwa campus as a site for this research is predominately in the area surrounded by the Basotho speaking people, but the majority of the students are from the near Natal province, which is predominately Zulu-speaking.

3.15. ETHICS

In any academic or scientific research, ethical considerations are vital. Ethics are the building block of humanity. A board of ethics is not only found in education policies only but in different academic spheres, including religion and bioethics. In this study the researcher ensured that at all the ethical guidelines stipulated by the schools of higher education of the University of the Free State of 2014 were adhered to. The University's education department had a draft document which was

published independently in 2014 and the researcher was given permission to conduct research for the purpose of the fulfilment of a PhD in higher education studies. The researcher applied to the Committee in a form which stipulated the requirements of *why*, *how* and *when* the research was going to be conducted.

The “Ethical Clearance Guidelines for Human Research” (UFS, 2014) provides a foundation on which research should be carried out, and guides the attitude and spirit of the researchers throughout the entire process and beyond with nine key concepts crucial in research ethics.

1. Harm/Risk & Mitigation: All harm or risk of harm must be mitigated
2. Informed consent/ assent: This means the people granting permission must fully understand the purpose and process of the research, what the risks are, how these will be mitigated and why the research is taking place.
3. Vulnerable Participants: These are participants who are at particular risk of harm, due to their personal circumstances, or are vulnerable to manipulation or force to participate in the research.
4. Conflict of interest: This occurs where the researcher has a vested interest in, particular, and the outcomes of the research.
5. Confidentiality and Anonymity: Participants, be they individuals or institutions, have a right to privacy or institutions, have a right to privacy and there should always be an intention to maintain confidentiality, unless specifically waived by the participants
6. Beneficiation, Reciprocity and Remuneration: Beneficiation – is the direct benefit derived from the research by the participants, their community or organizations, and the larger society
7. Reciprocity: occurs where certain participants don't benefits implicitly from the research, considering the risk of harm they are subject too.
8. Remuneration: the paying of money or tokens for participation is an accepted practice in much of the world, it is very important to examine the direct impact of such remuneration on the participants and their communities
9. Deception: essentially is not informing participants of the true purpose or methods of research, or deliberately falsifying this information in order to misrepresent or conceal the precise nature of the research.

In chapter 2 of the Republic of South Africa's Constitution (1996:7) paragraph 9 on equality, five factors (rights) are listed:

- Everyone is equal before the law and has the right to equal protection and benefit of the law
- Equality includes the full and equal enjoyment of all rights and freedom. To promote the achievement of equality, legislative and other measure designed to protect or advance persons, or categories of persons, disadvantaged by unfair discrimination may be taken
- The state may not unfairly discriminate directly or indirectly against anyone on one or more grounds, including race, gender, sex, pregnancy, marital status, ethnic or social origins, colour, sexual orientation, age disability, religion, conscience, belief, culture, language and birth
- No person may unfairly discriminate directly or indirectly against anyone on one or more grounds in terms of subsection (3). National legislation must be enacted to prevent or prohibit unfair discrimination
- Discrimination on one or more of the grounds listed in subsection (3) is unfair unless it is established that the discrimination is fair.

Paragraph 12. Of Chapter two in the Republic of South Africa's Constitution (1996:7) listed the following rules concerning freedom and security of the person:

- (1) Everyone has the right to freedom and security of the person, which includes the right -
 - (a) not to be deprived of freedom arbitrarily or without just cause;
 - (b) not to be detained without trial;
 - (c) to be free from all forms of violence from either public or private sources'
 - (d) not to be tortured in any way; and
 - (e) not to be treated or punished in a cruel, inhuman or degrading way

The inclusion of the clause is justifiable in many ways, especially relevant to this study. As students and learners have freedom of education and of their expression, education should not suppress their views. In any research activity they should not be treated in any degrading or cruel way. Lastly, the macro-system as embraced by

the Constitution has a great influence on any academic and research activities, either by public or private institutions.

3.16. SUMMARY

In this chapter, the step-by-step process of conducting this research project was outlined and explained. The chosen research approach was outlined and its relation with the chosen theoretical framework (CER detailed). From the onset of this research activity the ethical issues were taken into account as vital items of any research undertaken in academic settings.

The next chapter presents data analysis which is the backbone of this research project.

CHAPTER 4

DATA PRESENTATION, ANALYSIS AND INTERPRETATION ON USING RBL TO CREATE SUSTAINABLE LEARNING ECOLOGIES IN HIGHER EDUCATION

4.1. INTRODUCTION

In this chapter interpretations and analysis are presented, from interviews and discussions, using quotations from the participants. The analysis of the data is divided into two parts, the first includes the views from face-to-face-discussions, the second the responses to the focus group discussions. Challenges or obstacles in creating resource-based learning in high education institutions and possible solutions are examined. The researcher incorporated CDA for critical views and discussions of the group members, including the views of the facilitators.

4.2. CHALLENGES TO CREATING SUSTAINABLE LEARNING ECOLOGIES IN HIGHER EDUCATION

The challenges to creating sustainable learning ecologies vary and are not to be taken at face value as they are critical for understanding the implementation of policies, new teaching and learning methods. In higher education these involve not only policymakers and teachers but also students, learners and communities at large. They are not an individualistic but a collective initiative and, as argued in chapter 2, providing higher education to all sectors of a nation's population means confronting social inequalities deeply rooted in history, culture and economic structures that influence an individual's ability to compete.

4.2.1. Usage of old-fashioned / traditional methods in teaching

In creating sustainable learning ecologies it is difficult to use old teaching or traditional methods, a factor highlighted by the co-researchers (pseudonyms). The purpose of this question was to break the ice and start the discussion:¹

Researcher: *What are the challenges you are facing in PSIN 1415 in relevant to the tools you are using?*

Sipho: *The challenge that I normally come across in the textbook which is my first tool, the textbook is too big like is complex; you have to read from the first page to the last to get information. In my high school the textbook was straight forward.*

Sarah: *I am Participant Two, my challenge is about the textbook, it has bombastic words, such as ‘hypothesis’, one is not familiar with such words.*

Julia: *Just to interrupt, it is really necessary to write things according to our understanding or just write according to the book, because the students are complaining after writing the test. Because they write things according to their understanding, so it is really necessary to write according to the book that’s my challenge though.*

Facilitator 11: *“Talking Uhh I would like to go back to what other participants have been saying, looking at the textbook, most of those students don’t even have those textbooks, but what they specifically indicates is, those with the textbooks, when they start reading the textbook, or when they are trying to understand and write what they are asked, now they write what they are asked, the lectures and facilitators started to marked them wrong, they need to go back and ask what I said is what the book is saying, sometimes you might write your understanding, and that is not what is in the book.*

The above extract points to a combination of transitional challenges and old method of offering teaching in higher education institutions. The lecturers provided different approach from those of the high school, because there were no clear transitional

¹ The extracts here are presented as verbatim. English was not the first language of the participants but was considered as adequate to convey the meanings, unless otherwise stated. Pseudonyms are used.

policies in higher educational institutions that elaborated upon the difference between high school and higher education. In relation to the point mentioned in Chapter 2.5 it is clear that higher education viewed from one side of society is from the learned sector. The learners are not included in active participation in their learning process. Traditionally, higher education was dominated by the learned, for example, teachers and professors. Again, as stated in Chapter 2.4, CER as a tool was used to critique, challenge, transform and empower the students in higher education. The students are not empowered but are not involved in their learning processes.

Engaging in the same question posed by the researcher:

Andrew (co-researcher): *As for me I have only two tools my textbook, and my lecture, and the module guide. The first tool is my lecture 'she' cannot talk loud we cannot hear her. The only students who can hear her are the ones in front – we are too many in the class. She (lecturer) never pays attention to the students at the back.*

John: *When I'm doing gardening I use spade and other tools to help me do my gardening, I use spade fork, machines to cut the grass and others.*

Researcher: *That is fine, but when you use tools and resources in an educational setting what do you use and how you do use them?*

Peter: *I use the computer room where you get there to use Internet, and the Blackboard, which is also a resource learning material. I also use Internet and the e-mail to communicate with other student from our class. We share information. I find it challenging (SIL 108) because we use different resources like Psycctreck and Internet to get information.*

From the above extract it is clear that teachers still rely on textbook and notes. Also, the large size of the class was a challenge. One of the old methods of teaching was teachers or lecturers standing in front of the class and giving the students instructions. An important question arises: "How many of us have been taught in higher institutions through textbook and the word of mouth?" Most have been taught in that old-fashioned method, so lecturers are failing to use new methods of teaching, such as voice recorders, videos, practical engagements, resource-based

learning, project or material-based learning. Large classes also are uncontrollable in some cases, but lecturers continued with an authoritarian fashion of teaching, “*standing in front of the class giving students information on which students are perceived as passive recipient of information*”.

As reported in chapter 2, and by Ellis and Goodyear (2010:108), ‘ecological balance’ is important and the learning ecology should be conducive to and encouraging for learning. The environment and learning spaces should be taken into account to create sustainable learning ecologies in higher education, and as O’Neil (2009:3) found, the quality of the teaching and educational experience for students and faculty depends largely on the flexibility of classroom space, the ability to reconfigure furnishings, and the ability to reconfigure technology within the classroom. Student need space to read, freedom of movement and opportunities to engage with their materials, resources and tools. The question posed is thus: “Why cannot lecturers resort to new methods of teaching and learning?”

Julia: *The textbook had bombastic words and sometimes there are words you don’t understand it isn’t is too small – if you come in late you have to sit on the steps.*

Sipho: *I would like to clarify to Julia and co Andrew, academically we had what we call a module terminology, so when you write in a certain module, you write in a certain module, you must be specific using its own terminology, like for example, if you write in physical sciences you must use its terminology I think that is why the lecture end up making us wrong we really had to adapt to its terminologies, given those that it is our first time but we must try to use those terminologies because it’s the module terminology.*

Whilst it is a sensible proposal for lecturers to use new methods of teaching, such as e-books, they would also need adequate resources.

The above extract shows that alternative methods of teaching were not used by the lecturers, and the participants were taught in a second or third language of instruction. Textbooks were written from a Western perspective, in English, not their home language. This language issue can distort student performance for previously disadvantage learners.

Capra (1998:3) argued for an understanding of how the ecological communities of nature, the ecosystems, organize themselves to maximize their sustainability. Lecturers should understand their learning environment as well as their students and CER tries to bridge the gap between the previously disadvantaged in relation to access to education and language domination by one sector of society over another.

4.2.2. Text books, technology and complexities in using Internet as a learning tool

Research tools are important in a learning environment, as resources which equip the students with the advances in learning approaches:

The emergence of the new learning technologies has coincided with a growing awareness and recognition of alternative theories of learning, theories that suggest many problems and inefficiencies with conventional forms of teaching (Oliver & Herrington, 2003:112).

Specifically in this part the researcher and the co-researchers identify challenges in relation to the usage of textbooks and technology. The text books had been in usage for a long time in universities but due to the new developing technologies there are e-books which can be accessed electronically.

Sarah: *Okay! Like in terms of the textbook is big, before you study with it you have to underline most important things, to make notes. I am using the slides sometimes Internet. Challenges; I use to search sometimes, how to search Internet provide too much sometimes you are not sure if information is appropriate or not. You have to know how to search.*

William: *I would say the SIL 108 is a very challenging module, you might find that at some times is difficult to understand but as we tend to get together we tend to understand like the information we are getting from others.*

Sipho: *First of all I would like to make the examples of the tools that I use first of all is the textbook, secondly I use the internet, I use the Psycctrek and the last one is my facilitator. I normally came across when I use the textbook*

is normally too big, you have to read from the first page up to the last, in my high school the textbook was straight forward. Second tool Internet sometimes you do not get proper information. Sometimes is not easy or to trust the information, it happens that you read the information which is not reliable. My third tool is the Psychtrek that I use, the challenges is that the information is not all there, it is like the slides, it just guides you, it's just need more information, and sometimes there are more questions in Psychtrk and I sometimes relies on them too much. Which makes me forgets to go to my textbook. The last tool is my lecturer, sometimes the lecture takes about two hours in a classroom which is too long. I end up being tired and losing the whole interest in the whole lesson.

The co-researchers were of African origin, speaking ethnic languages rather than the English commonly found in academic textbooks. From the above extract the three challenges were identified as a language issue, the use of technological devices in learning, and the transition from high school to higher educational institution (university).

Sarah indicated many challenges which could be traced back to the lecture communication of instruction, for example “*how to search Internet provide too much sometimes you are not sure if information is appropriate or not*”. It was evident that the lecturer did not provide clear instructions to the student on what to search for specifically on the Internet:

Facilitator 11: *I like to go back to what other participant have been saying. They are talking about the textbook, but most of the students don't have that textbook. But when they start reading the textbook maybe they got the problem with the terminology.*

John: *I would like to agree with co-researcher who just spoken that in most cases. I cannot gram all the words in the book. What is the meaning of the word understanding if we fail? I think we had the problem with our lecturers because they are marking us wrong.*

In the above extract Facilitator 11 reports a lack of resources, in particular textbooks, for the students. Such resources are important for learning initiatives. Facilitator 11 also reported that a “*problem with the terminology*”, an issue of language.

4.2.3. Challenges in determining the context for the creation of sustainable learning

The concept of ‘context’ is viewed differently and is used in discourses from various viewpoints. The context is critical for the determination of the creation of sustainable learning ecologies, and suitability of the context is valuable. The term’s lexicological meaning may be “the circumstances in which an event occurs” (*Oxford English Dictionary*, 1994:172). It may also be the ecology in which students find themselves or the learning environment.

- **Lack of physical space**

The learning space is vital in education and how the knowledge is generated and distributed. Hannifin and Hill (2007:528) provided three contexts in which RBL can be used to create sustainable learning ecologies, namely *external*, *individual* and *negotiated*. My interpretation of the external context is when the problem or situation is provided to the student, community, society or teacher. On the other hand, the individual context is initiated by the learners themselves and the negotiated contexts “are the combined aspects of external and individual context” (Hannifin & Hill, 2007:528). Based on the above learning context, the researcher facilitated the discussion by posing the following question to the co-researchers:

Researchers: *Do you think the context that PSIN 1514 is offered is good or what? If good how so and if is bad please elaborate?*

William: *It is not a good environment, it is bad we are too many in a class we need a bigger environment if it is not big we have at least mics (microphones). Lecturers should use mics and the other thing is that if you arrive five minutes late you have to sit on the stairs, when you are sitting on the stairs for three hours you lose concentration. Some of us have short concentration span, so it’s really bad for us.*

The context is important in teacher and learner engagement, routines and project presentations. The groupings of students and the physical structure is vital. To create a classroom or lecture hall context to simulate real-life events may be difficult, depending on the task given.

In response to the above question posed by the researcher the following responses were recorded:

Sipho: *I would say the context is not good at all, lecture room is too small you will find that you don't have a chair. When you arrive late you will sit on the stairs.*

Sarah: *Ya! It's good, because it is a study about behaviour also include (ke hore, "meaning" it concerns with animals and behaviour and things we do).*

Facilitator 10: *What I have notice as having facilitated this module, it sometimes becomes difficult to control large number of student about three hundred. You would see that whilst you are teaching some students would be talking others sleeping up there (pointing at the top up chairs in a lecture hall). To control the class is like a management "juggling" on this site and this site. For RBL students are supposed to sit like this (pointing at the round table set up).*

It is important to note that "in unpacking a text it is important to remember that it is not possible to read meaning directly off the verbal and visual textual signs" (Janks, 1997:332). In the first of the above extract the narrator Sipho provided the researcher and co-researcher with the use of first-person narrative "I", affirming that he was not talking on behalf of someone but from the point of a primary source, namely himself.

As a researcher using CDA I refrained from making inferences as this would distort the true role of the narrator. As Sipho said, "*the context is not good at all*" and it is the reality of what the narrator encountered in the learning ecology. The response by Sipho is an active rather than passive voice about the context which should be accommodative and caring for productive learning:

Our most powerful conception of reality is that it consists of 'goings on': of doing, happenings, feeling, being; these goings on are sorted out in the semantic system of the language, and expressed through the grammar of the clause (Janks, 1997:336).

Using CDA to handle Sipho's claim it is crucial as he uses mental process "sensor + phenomenon" (Janks, 1997:336), which are found in the system of transitivity. It refers to simple linguistic selection that can be easily recognized and is assertive in his narrative about his feelings of the learning space or ecology, which in CDA is called 'active construction' rather than passive construction of the viewpoint.

Sipho's understanding of the term 'context' derives from the perspective of the physical structure of the lecture halls, and is a hindrance to effective teaching and learning and application of RBL. One would conclude that there is a need for an environment conducive to learning ecology to facilitate sustainable learning ecologies. At present it is a challenge not only in South Africa but also around the world.

There is a critical challenge in managing large numbers of students in a physical structure which is not appropriate. It is clear from what Facilitator 10 raised in the discussions that *"it sometimes becomes difficult to control large number of students about three hundred"*. It was not possible to use RBL in a minimal ecological space and for RBL to be implemented on its larger scale the resources needed to be available.

The researcher found hybridisation of understanding of the concept 'context' from Sipho, Sarah and Facilitator 10. Sipho said that *"the context is not good at all"*, whilst Sarah responded: *"Ya! It's good, because it is a study about behaviour also include (ke hore, "meaning" it concerns with animals and behaviour and things we do)*. From the above excerpt it is clear that one co-researcher focused on the content of the module more than the physical space. Sarah understood the context from the viewpoint of the style and offering of the module, so that literary content of the module was acceptable but the physical context was not necessary. Module context and physical context facilitate each other.

The relation between the different contexts is challenging because if one element is dysfunctional the whole learning context would be crushed. It is clear that there is a lack of systematized process in enrolling the students, whilst there is no clear infrastructure to accommodate them. There might be a problem with lack of consultation between the administrators and policymakers.

- **Lack of independence and collaboration**

The main goal in most countries is education for all and free from political interference. This is promoted by CER, whereby students are free and independent in their learning spheres and free to collaborate either nationally or internationally. Authority has long been something of a dominating figure, with the teacher having authority over students. Students develop anxiety of talking on the same level as their superiors:

***Facilitator 11:** So there must be a time where the lecture or the facilitator should be more than one, at least they would help each other in managing the class, but it was also a challenge when now we could feel that students are becoming confused, when this lecture voice is coming from that side and another voice coming from the other side, and then you can tell that they (students) are confused. I also agree with Co-researcher Ten that if it is RBL the context must be suitable.*

***Sarah:** You have to search for the information, sometimes you are not sure if you are searching for the right information, because the lecturer is not there.*

From the above excerpt it can be deduced that there were challenges and problems with communication, and differences in the classroom-based learning as the students were treated unequally and they were on receiving information passively from their lectures or teachers. If the students were “confused” it was because they were not part of the whole planning of their lessons. In Jackson’s (2013:13) view the context, purpose, goals and objectives, together with content (resources), process, and relationships are all determined by the provider. There is a serious lack of collaborative learning from the co-researchers as the above excerpt is highlighted. The instruction of the module guide was not followed by the lecturers, thus inhibiting the collaborative potential of the students.

Facilitator 10: *Because of the setting there is no feedback-the delivery method is not good*

Sam: *One of the tools we are using is the internet, I feel in psychology we are not in that much using the internet, if you compared it with sociology, In sociology we are using, by using multiple choice questions (MCQs) which we are using, by using BB. But they are not there in Psychology meaning, those MCQs they act as the guidelines, what to study in preparation for the tests. But in psychology there no such, which we are been given, so if at least give us something because when we study in Psychology, we don't have questions; remember this is our first time doing Psychology, so they (lecturers) they don't give us full guidelines of how are we going to be assessed.*

Facilitator 10 also believed the vital factor in critical approach to be feedback, an important factor facilitating learning as it impacts on the attitude of learning from the side of the students. Spiller (2009:2) stated that it is widely recognized that feedback is an important part of the learning cycle, but both students and teachers frequently express disappointment and frustration in relation to the conduct of the feedback process. Whilst there is *positive feedback* and *negative feedback*, in some cultures the former is not accepted. The manner in which it is provided to students is also important, whether as *individual feedback* or *group feedback*. If the setting is not appropriate the lecturers or teachers will not be able to give the student the right feedback. Also, the amount of feedback should be limited as a large amount can confuse the students.

Feedback should facilitate learning and not cause breakdowns in the effective learning. Delivering feedback is time-consuming, particularly with 300 students. Spiller (2009:15) listed four good practices of providing feedback: (1) help clarify what good performance is (goals, criteria, standards); (2) encourage 'time and effort' on challenging learning tasks; (3) deliver high quality feedback information that helps learners self-correct; and (4) provide opportunities on feedback (to close any gap between current and desired performance). These practices were not applied as the setting and time did not allow, presenting a serious challenge to the overall

application of RBL in creating sustainable learning ecologies in the higher education sector.

Spiller (2009:14) listed eight good principles of feedback, which in the current research were absent or unavailable:

- Promote dialogue and conversation around the goals of the assessments task
- Emphasize the instructional aspects of feedback and not only the correctional dimensions
- Provide feed forward and indicate what students need to think about in order to bring their task performance closer to the goals
- Specify the goals of the assessment task and use feedback to link student performance to the specified assessment goals
- Engage the students in practical exercises and dialogue to help them to understand the task criteria
- Engage the students in conversation around the purposes of feedback and feed forward
- Design feedback comments that invite self-evaluation and future self-learning
- Enlarge the range of participants in the feedback conversation-incorporate self and peer feedback.

One participant said:

Sam: *There should be tutorial classes. I think the solution is for that if they (lecturers) can try to open the tutorial*

The manner of expression is of concern, as the tutorials are an important piece of structure formation which help the students to accomplish their goal, for example, forming a group with peer interaction in which students would be free to interact with their peers and act collaboratively, engaging in lessons or projects given. Sam's words "*I think the solution is*" revealed that there was no group interaction.

4.2.4. Lack of support / scaffolding using RBL to students

Scaffolding or support is important in helping students to achieve their goal. Support goes with good teaching practices which are practiced by lecturers and teachers in educational institutions. The challenge identified by some co-researchers was the level of support from lecturers or relevant mechanisms of support:

William: *I think we get less support, we not given the opportunity to have the tutorials sometimes we are scared of asking questions like, if we were asking questions to the tutors. Unfortunately we don't have tutors pretty less support from the lecturers because we are given less tutorials, other, from that.*

Peter: *I think we do get support from the lecturers, but it is not such much, we get much we as student we are afraid of asking questions. It would be easier for us to go to the tutors; unfortunately we are not having tutors.*

Sipho: *I would say I get a very good support from the lectures, because I remember that they give us a clue of what to study. It is good for my academic career.*

Peter stated clearly that he received less support from the lectures. For RBL to work effectively and in a sustainable fashion, support for the students is vital. Lecturers failed to plan for the tutorial, whether forming small groups which would empower the learners as independent from the authoritarian teaching practices used by the lecturers.

Chickering and Gamson (1987, in Cook, Rushton, McCormick & Southall, 2005:8) stated that the use of small group teaching as a component of a varied diet of teaching methods facilitates the fulfilment of six principles of good practice in undergraduate teaching:

1. Encourages contacts between students and staff
2. Uses active learning techniques
3. Gives prompts feedback
4. Emphasizes time on task
5. Communicates high expectations; and
6. Respects diverse talents and ways of learning

These principles were not applied in our research project as the lectures did not encourage contacts between students and staff, nor were active learning techniques used. It was found that there was no feedback provided, a serious concern and challenge in higher education. Individual or person attention was not given to the students and their diverse backgrounds were ignored.

Cook et al. (2005:10) found tutorials suited to promoting the social integration of new students, group work and dealing with individual problems. In circumstances in which new students can get lost in large anonymous modules the use of small group teaching can promote a feeling of identity with the course. Not all the co-researchers were in agreement on the support received from their lecturers:

***Peter:** I think we get enough support from our lecturers because she give us slides for those of us who do not have textbooks, and for those who arrived late they can read for themselves*

***William:** In terms of preparing for the test we get support, in terms of guidance she (the lecturer) tells us what to study and not to study.*

William focused here on one aspect of the tests but not at the whole system of teaching and learning. In Chapter 2.11.3 it was argued that good implementation of scaffolding strategies can be of vital use and students such that the university can benefit from the positive success rates and positive output rate. This was not being effectively implemented and so constitutes a major challenge.

4.3. POSSIBLE SOLUTIONS TO THE CHALLENGES

There would be no absolute solution to the challenges faced, due to changing educational trends around the world. Changes in countries' political situation affect the educational systems and the impact of globalization cannot be ruled out as having an impact. According to Calderon (2012:4) the continuing expansion of higher education brings numerous challenges as well as opportunities for governments and institutions, and how these are managed largely depends on their relative stage of development or maturity. In this research project some of the co-

researchers have provided a hint as to what might be seen as possible solutions to the problems and challenges faced. This section presents possible solutions.

4.3.1 Usage of new methods of teaching

The possible solution to the methods of teaching should be liberal and emancipatory. The students have to be given options to choose, acknowledging their right to participate and engage in the learning programmes. They should be cared for and positive learning attitudes from the lecturers would encourage participation and positive attitudes. RBL can be a possible alternative as it is now considered by most higher learning institutions as a new method to bring change. In discussions with the co-researcher an important point was highlighted by

Facilitator 11:

RBL I think it can bring change, for example when you use the resources, you are actually trying, let's say you are, you just learn a new term, as using resources you will try I in one way and your lecturer, think about it, relate it with other information then you discuss in a group with other people, that is experiential learning, then you are learning about it again then it will bring about change. Then you can able to apply it maybe during questioning where now you able to relate it to tuition. It will enable you to be able to be critical thinker. I don't just absorb but you can apply it to other situations.

Sipho: *Is really "aaa" (pause) it (RBL) can bring about change, it makes you to live in a diverse world focusing on not one thing. It also makes you to understand many things.*

In the educational sector and higher learning atmosphere the teaching methodologies are teacher-centred rather than learner-centred. Students should play a significant role in learning how to learn and the construction of the teaching context is diverse so they should be taught in such a way that they are able to apply the context from an academic to a social background.

Learning space should also be considered as a critical version of learning. The development of new teaching method was highlighted by co-researchers, such as

use of the Internet and technological devices. The promotion of teamwork through group works and collaboration is a possible solution which teachers and lectures can use to achieve interdependence, accountability and conflict-resolution.

4.3.2 Reading skills (textbook) resolving technological complexity

Acknowledging that they need to be equipped with reading skills, most of the co-researchers reported that they used the textbook as a resource, though one participant complained that it was too large and the vocabulary 'bombastic'. This raises the question of whether the words were jargon or part of a wider language problem. For the co-researchers English was a second language.

It is crucial that a balance be maintained between the student and lecturers, to create stability and overcome challenges in using technology and other devices in the learning environment. Ellis and Goodyear (2010:20) list four key factors of ecological learning:

1. The point of ecological balance for a university most easily rests amongst the trinity of learning and teaching, research and survive – with learning, as it is in this concept that the other aspects of university work can find a home
2. Maintain ecological balance on learning requires all the parts of the university to act in ways that demonstrate self-awareness of their function and purpose in relation to the mission of the institution. Every part of the university needs to be imbued with an understanding of good learning
3. In order for the parts of a university to understand how they are functioning, in relation to the work and purpose of the whole, they need to engage in systematic process of collecting feedback form stakeholders about the effectiveness of their operations. Student feedback in central to this, but feedback from other internal and external stakeholders is important too.
4. In a context of rapid change, self-correction by parts of a university as a whole is constantly required in order to maintain an ecological balance focused on learning.

Students are mostly exposed to various challenges, such as using the Internet. Some can afford and others not, and to create harmony and management between

the duties as students and those as a member of the community presents a challenge that requires a solution for the students to effectively execute their academic work:

Facilitator 10: *Most of the time we find that in resource learning student have to take responsibility which is very a challenge because they are still young, so it requires a lot of self-discipline and responsibility which sometime is difficult, if you don't understand in a class it means (wena) you have to go out and find out that information.*

Julia: *It is very interesting because once you are exposed to that challenge, and you are able to deal with that challenge. Then I would say RBL can bring about change. Now you will realized that no no no I have to do that, now you will start working on the time management that of course is change. Then you will realize that I got the problem here then you will start changing.*

Student survival at university is part of ecological sustainability, because the universities have a responsibility to care for their students, and the surrounding ecologies. They must foster collaborative activities between the students and surrounding and international communities.

University survival depends also on external or internal stakeholders, for the amount of work, focus on research, implementation of new methods of teaching and learning and rational frameworks from both students and management. Also critical to this point is the government, as it plays a vital role in the policymaking and direction for the modernization of technologies to take effect. This helps in ecological balance, self-discipline and time management, as highlighted by the co-researchers in this study, showing the assumption of RBL and CER combined so that students can play a significant role in the learning process.

4.3.3 Creation of adequate physical space

The university environment is as important as the home, in terms of safety and security. It should create an environment conducive to learning: "The challenge for teachers and schools is that integrated objectives such as active citizenship,

sustainable development can't be taught using traditional teacher centered school methods" (Reti & Tschapka: 2012:29). The growing number of students at universities requires more funding.

In discussions of the issues relating to learning spaces and the university infrastructure the co-researchers proposed possible solutions.

Facilitator 11: *I was thinking about the media lab, all modules being able to be access and the accessibility so with those who does not have computers with access to Internet, I am just wandering so what happens with those.*

Julia: *The computer lab closes at three a.m., and is the challenge to those students residing outside the university campus. If you stay off campus you can access Internet by using your cell phone.*

Facilitator 11: *(probe by saying) and you must have airtime to do that, (All co-researchers laughs) it depends also what type of cell phone you got. What also if the Wi-Fi doesn't pick it up (Internet).*

Facilitator 10: *But we have Wi-Fi here at campus I, this is available because when I come to campus it connects to Wi-Fi automatically.*

Facilitator 11: *I know of one student who had a phone that connects easily on Wi-Fi, but if that student put it on, other students can be able to pick it up from his cell phone, so that kind of thing happens. How can we know? This can be a solution. If you know your friend who had that type of a phone others can be able to pick it up from his cell phone.*

Facilitator 10: *Okay!!! "AMM" what I've noticed having facilitated the module before it was a challenge that I notice, with RBL it is important that the class setting is in the way that students are able to interact, especially during the activities, especially you as the facilitator you need to be a resource as well unlike being a lecturer standing in front of the three hundred students. For me is like RBL should be offered in the way that are sitting, in group work and discuss things and clarify things with the students. So you find that students who are sitting way up there, you can see others are charting others are sleeping, so it becomes like a management so you are juggling here and*

there. Maybe the classes need to be smaller, or maybe they should device another way if it can be a true RBL environment. But I doubt that all the students become engage in class. So that is the challenge I have.

A solution to lack of physical space is for the universities to create favourable interiors of the lecture halls, and design and build private residences. This would give the students a sense of belonging and motivate them to learn. To facilitate the building of residences, especially for the first-year students to be accommodated in the university culture, a sense of belonging has to be instilled.

Good and accommodative physical space increases the creative initiatives and ability of exploration. Favourable physical space can also help in student retention. As shown in the pictures below, the design of the setting differs in intention and teaching method.

Picture A



The above picture shows the traditional set-up of the lecture halls and classrooms in colleges and the universities. In terms of facilitating RBL at universities students' free movement is problematic and limited. Material-based and project-based learning, which are similar to RBL, would not be executed well in this type of lecture hall. Congestion impedes concentration, focus and active engagement in learning activities.

Picture B



Picture B reflects traditional methods of teaching and learning which are not relevant in this information age or the current century. In this form of teaching the teacher is the authority in the lecture hall and the student are mere recipients of learning material. This format is opposed to the basic foundation of active and collaborative learning, and the teacher had to be consulted in front of other students.

Picture C



The above picture reflects the ideal intention of RBL and CER as the teacher is not posing as an expert or authority on knowledge creation, but rather is part of the group sharing the knowledge and knowledge creation. The students work collaboratively and are free to engage, participate and voice their ideas. The situation is not intimidating, as in Pictures A and B, where order is restored and students had to listen to the teacher.

Picture D



Picture D is another ideal setting which encourages engagement and participation, amongst the students. The set-up is promoted by RBL. The students have equal opportunity in seating, which encourages intimacy, integration and collaboration with the lecturer, not an authoritarian form of learning. The group is manageable rather than a large assembly in which students do not pay attention.

4.3.4 Creation of student independence and collaboration

Although independent learning and student-centred learning is vital, collaborative learning has to be created by the lecturers. The learning environment should be caring and accommodative, and small groups are better to control when working in a project. Hugh-Jones and Madill (2008:32) argued that more carefully controlled and thorough observation of the process of students' engagement in collaborative work would be useful in identifying how they benefit from the group and negotiate their own contribution. RBL proposes a student-centred approach whereby students are able to be in control of their learning. In our discussions some co-researchers said they had independence and control when working on a formulation of the collage given as a homework:

Sam: *Working with my group, I felt positive about our work ethic. My group members and I were quite eager to take part in the making of the collage. I felt good with the communication we had. Although when one member didn't contribute anything, I felt a bit thrown off or negative because it had seemed as if she was dedicated to the task at hand. Other than that, working with group felt good.*

Andrew: *During the collage was not a difficult task at all, but what I found being difficult was the venue and time which we were supposed to agree upon. Only few people in my group participated, but overall, I found it very mind calming and a relaxing thing to do after a long day at school.*

Sarah (interrupting): *I think working as a group collecting photos was very helpful to me. Because now I know more about positive psychology, and that positive psychology is also about being happy in something that you do not like to do, is also about being supportive, loving and caring for each other. Working with a group was good even though some of us did not participate, but it really helped for or to some of us to understand.*

4.3.5 Creating support mechanisms for the student

Support is vital in the learning environment and learning ecologies. Students should be guided through knowledge and successful adjustment to their learning ecologies.

RBL acknowledges that students are humans, free and independent. Inability to support them would mean they were not free, emancipated or actively engaging in their educational process. They should however be taught to transform and not be the subject of the teacher and lecturers, conscientized not dominated by the opinions and thinking of the teachers.

Two critical factors stated by McCowan (2006:65) about students being liberated were:

There are two key pedagogical features in the process of conscientization; dialogue and problematization. Conscientization can only be achieved through dialogical encounter, where the student is fully involved in the educational process. Problematization involves the presentation of learner's reality so as to reveal its problems or contradictions. This allows learners to distance themselves from their immediate situation, and gain a critical perspective on it.

The creation of support is vital as it makes the learners aware of their surroundings, but under the guidance of their lecturers: "Support may take the form of a teacher modelling the target performance of a task, or giving verbal explanations that identify the elements of the task and strategy" (Mcloughlin, 2010:150).

4.4 FAVOURABLE CONDITIONS FOR USING RBL IN CREATION OF SUSTAINABLE LEARNING ECOLOGIES

The following are favourable for using RBL.

4.4.1 Creating sustainable learning environment

Learning ecology, space, and environment are crucial for learning. The need for the clarification of the role of the learning environment is vital for the effective implementation of sustainable learning ecologies in higher education. Reti and Tschapka (2012:29) listed the following factors that define good exemplars of the role of the environment in learning:

- There is emphasis on the learners own activities and self-directed study
- Study takes place at least partly in either a simulated or authentic real world situation
- The students have an opportunity to be directly interactive with the subject of the study
- The planning of teaching problem-oriented rather than subject-oriented
- Study is an intergraded, longish process rather than a series of short lessons
- The student is aided by networks of different persons offering support, mentors and experts
- The teacher's role changes from that of someone who imparts knowledge to that of an organizer, a person offering support and a planner of the learning environment.

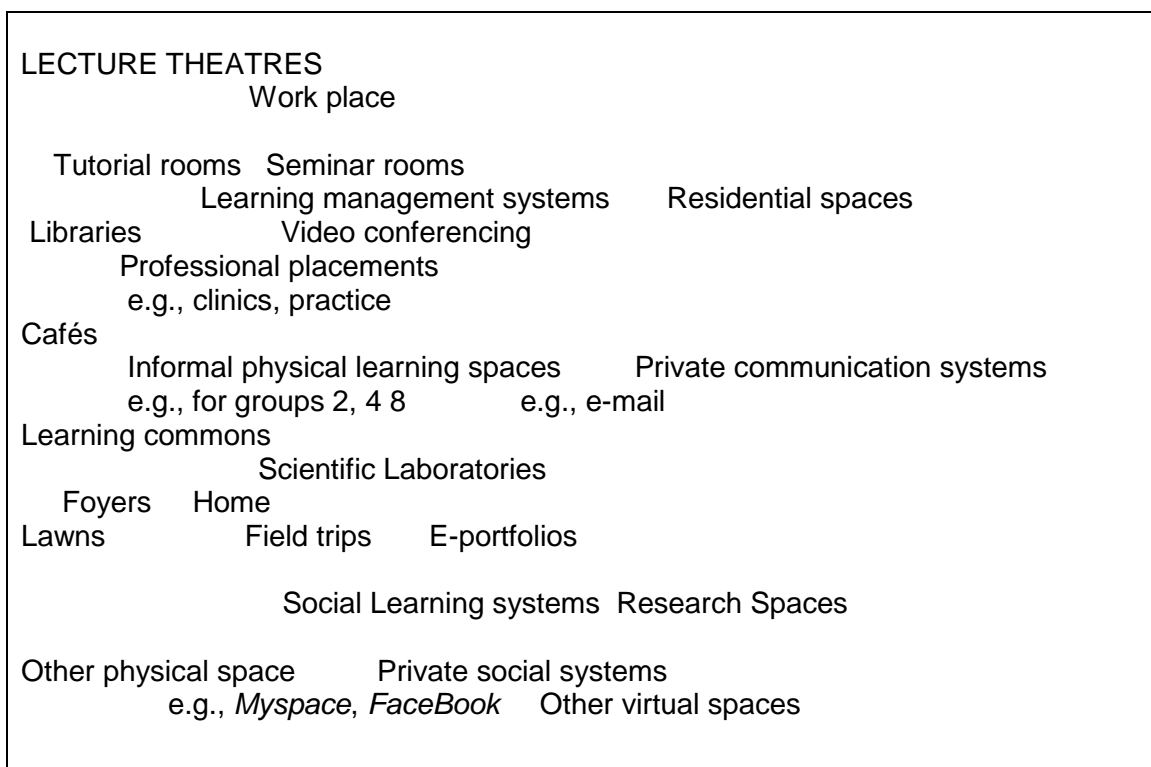


Figure 3.2: Structure of the learning space inventory in the ecology of the university (adapted from Ellis & Goodyear, 2010:157)

4.4.2 Empowering students through collaboration and participation

Referring to Pictures B and C, it is evident that space encourages participation. If the students are struggling with the work they can be seen easily and receive the necessary support. In these two pictures the students are empowered by practical and self-assurance as well as debating skills. A good learning ecology or environment is conducive to learning: “A learning environment is a place or community where people have access to various resources they can use to be able to understand different things and develop meaning solutions to different problems” (Wilson, 1996:3; in Reti and Tschapka, 2012:28). An essential feature of these definitions is that the learning environment can be seen not only as a physical or virtual space but also as a human community forming a supportive, interactive network.

***Peter:** It was quite awesome to do the task that we have being given as a group. Working as a group makes the task to be easier because we were all committed to do our best. It was quite interesting because we were engaging with one another to explore the concept “Psychofortology”. I find it motivating the reason being that the happy faces made an important impact.*

***Sarah:** For I, working in a group was very enjoyable manageable. We divided the task amongst ourselves and everyone participated. It was fun and great. It was definitely more of an advantage working in a group*

Both extracts show the benefits of group and collaborative work, made possible if the instructions are clear to the students and the setting is favourable. Individual commitment is important as the group would be motivated to work on their project or task.

The importance of group work and collaborative work is stressed by the Stanford University Newsletter on Teaching (1999:1):

Without denying the significance of traditional lectures and instructor led discussions in undergraduate education, an increasing number of teachers are recognizing the value of also assigning collaborative work to their students. Small group work, used both in and out of class, can be an important supplement to lectures, helping students master concepts and

apply them to situations calling for complex applications of critical thinking skills.

One critical factor is that small group is manageable and good to work with, whilst the large group of about 300 would require special venues and extra lectures and facilitators to provide instructions.

4.5 THREATS TO THE USE OF RBL IN CREATING SUSTAINABLE LEARNING ECOLOGIES IN HIGHER EDUCATION

This section examines threats to the use of RSL in creating sustainable learning ecologies in higher education.

4.5.1 Thwarted personal interdependence of students

Adelman and Taylor (2015) noted that from a psychological perspective, it is important that teachers establish a classroom atmosphere that encourages mutual support and caring and that creates a sense of community. Such an atmosphere can play a key role in preventing learning, behaviour, emotional and health problems. If the structure in the lecture halls is not conducive to facilitating interaction between students the process of learning and creation of collaboration is poor. It is critical that the learning environment create a sense of belonging so that students feel emancipated and free to engage in practical learning activities.

Learning should be a tool to foster independence, free thinking and connections to people around the world. Learning should be used to fostering sustainable development and interacting. Higher education should be transformative and bring people together. However, Picture A showed the students were not free to interact with their classmates, due to the setting of the lecture hall. They could not see each other face-to-face, making friendship and interaction difficult to foster.

4.5.2 Fear of authority by the students

Sometimes the students fear authority, which in this case is the teacher. The reason they wanted tutorials was that they would be free to seek clarification and ask questions, different from asking a friend or classmate. Peer interaction creates a positive atmosphere of cooperation and interdependent learning. In creation of RBL the power needs to be equal for all who participate in learning processes. Students need not to be dependent on lecturers as they would go out to their community to engage in individual work which needs their initiatives and opinions. However, the traditional methods of teaching still recognize and perceive the hierarchies of power and authority, however, “authority-dependence has emerged as an issue in some qualitative pedagogical studies on peer collaborative learning” (Hugh-Jones-Madill, 2008:26).

Student support in higher education helps them feel comfortable when they interact as peers or as the group studying a similar module at university. As in this current study, discussion leads to a point at which the co-researchers talked about their comfort if they engaged with their fellow peers or study group. This is a reflection that some students fear to engage and participate in academic authority because of perpetuation of the usage of old traditional methods of teaching:

Peter: *I want to be fair to you, what I feel is if I am with the same students doing the same course I feel comfortable and relaxed, but when I am in class I do not want to even ask or answer the questions because the lecture can ask you follow up question and if I cannot answer it will be embarrassing for me.*

Andrew: *I totally agree with Participant Six, some students might laugh at you. I think the better way is to have tutorials like in Sociology and other modules.*

Sam: *I agree with all the participants if we could have tutorials I think we can actively partake in activities and programmes.*

This reveals that students wish to interact with each other and desire freedom and space to be with their peers so as to interact. Support from the lecturers is needed as is the support from the peers themselves. In Picture B the lecture or teacher

shows authority and control of the students. Whilst students need cooperation from the lecturer there is a need to formulate teamwork, in which children would learn spontaneously and independently from the lecturer.

4.5.3 Lack of resources

Resources are critical for the university as well as the students, without which teachers would not be able to execute their work or students complete their academic work. In this study it was acknowledged that textbooks have difficult terminologies and some of the students did not have any:

***Facilitator 11:** I would like to go back to what other participant have been saying about the textbook, firstly they (students) talk about the textbook but most of the students don't have those textbook.*

This extract shows that effective implementation of RBL is a problem without textbooks. Currently, unequal distribution of resources causes serious problems in educational systems.

The resources allocated to urban and rural universities are not on an equal scale, which is also a serious threat to effective education for the creation of learning ecologies in higher education. Allocations of resources require a further research in developing countries, especially in terms of urban and rural universities.

4.5.4 Language as a threat

Language is a vital resource in RBL but most of the co-researchers in this study stated that the 'textbook is too big' and used 'bombastic' words. Most of the textbooks are written in English therefore if it is difficult for those participants whose first language is not English. The classes also are offered in English, a serious threat as it denies some students freedom of speech as they might be afraid to express themselves in a second or third language.

The importance of language in learning is crucial as it impacts on confidence, and allows certain association with speakers who share common identify, culture and

custom. The value of using another language may be an advantage in certain circumstances, accommodating and accepting other people's culture and tradition, however in this study the issue is classified as a resource of learning and so has particular significance.

In relation to this threat of language is the additional problem of transition from high school to the higher education sector. In HE, students are expected to know English as it is a medium of instruction at universities. Also another possible threat to the effective implementation of RBL is the ability to read and write. The issue of textbooks in a foreign language is a threat to facilitation of sustainable learning ecologies. Education that is offered to students in their foreign language distorts the reflection of student potential.

In our group discussion the issue of what is describes by 'bombastic words' was the concepts or terminology but this was a problem for the co-researchers. In the discussion, Siphon tried to focus the group on a possible solution:

I would like to clarify to Julia, and Andrew I academically we have what is called module terminologies. We must try to adapt to module terminology”.

Facilitator 11: *(adding) you don't have to write the exact words like in the textbook, if you write in your own words you must not write words which are not there.*

Considering the above extract it is evident that the need for the resources of translation is not used available. Translation resources are vital, considering that the majority of students use a second language in their teaching and learning.

4.6 SUMMARY

In this chapter an analysis and interpretation of the data has been presented. The challenges in creation of sustainable learning ecologies were outlined. As stated in Chapter 2, the traditional methods of teaching and learning are no longer effective and the Internet was found to be accommodative to all co-researchers for its learning spaces. Access to more students was created by technology. One other finding was the complication in using language, with all the co-researchers agreeing

that language in the textbooks they were using were not suitable. Most of the co-researchers had been exposed to technological devices such as the Internet and mobile telephones. One other concerns was the physical space not being conducive to learning.

CHAPTER 5

DISCUSSION OF FINDINGS ON USING RBL TO CREATE SUSTAINABLE LEARNING ECOLOGIES IN HIGHER EDUCATION

5.1 INTRODUCTION

This chapter provides a brief reiteration of the objectives and basics of this research study. Each chapter is also summarized with specific themes discussed, identifying RBL tools suitable for the creation of sustainable learning ecologies in context. The findings are presented on scaffolding of RBL teaching and learning experiences for creation of sustainable learning experiences, optimizing RBL as an agent of change for sustainable learning ecologies in higher education, and the components of the solution, with threats that could hamper the usage of RBL in creating sustainable learning ecologies. Lastly, a conclusion is drawn regarding the abovementioned factors.

5.2 REITERATION OF THE OBJECTIVES OF THIS STUDY

The first objective was to identify RBL tools suitable for the creation of sustainable learning ecologies; the second to determine the context for the creation of sustainable learning ecologies; the third to scaffold RBL teaching and learning experiences for the creation of sustainable learning ecologies; the fourth to optimize RBL as an agent of change for a sustainable learning ecologies; the fifth to recommend ways in which RBL can be used to create sustainable learning in higher education.

5.3 SUMMARY OF THE CHAPTERS

Chapter one: lay the foundation for the study, with a brief literature review and background. It highlighted the previous research and researchers studying the same phenomenon under the investigation, “the usage of RBL in creating sustainable learning ecologies in higher education”. It also included research questions, hypothesis and aims of the study. The research design and research

methodology were described with the value of the research and ethical considerations included.

Chapter two: discussed the theoretical framework of CER and the learning ecology framework as a foundation to reach the objectives and find the knowledge-based input. The contribution of critical research was briefly described and ideas put forward to understand the building blocks of the study. The concepts were operationalized and related literature linked to the objectives. The challenges and components of the solution were discussed and threats that could hamper the usage of RBL in creating sustainable learning ecologies noted.

Chapter three: outlined the critical research approach. The co-researchers' background was provided and researcher's background given an allocation of discussion sessions. A description of the gathering instruments and how the data was analysed provided. Lastly, adherence of ethical conduct was confirmed.

Chapter four: presented data gathered from the co-researchers. The analysis was based on the data and interpretation of the data from the CDA. Extracts from the discussions with the co-researchers were included for analysis, including possible solutions to the challenges faced, favourable conditions and threats to the use of RBL in creating sustainable learning ecologies in higher education. Lastly, conclusions were drawn.

Chapter five: will present the findings, with discussions and summary, identifying themes in relation to the objectives, RBL tools suitable for the creation of sustainable learning ecologies, the context for the creation of sustainable learning ecologies, and different systems within the ecology of learning. The findings are provided on scaffolding RBL teaching and learning experiences for creation of sustainable learning experiences optimizing RBL as an agent of change for sustainable learning ecologies in higher education. The threats that could hamper the usage of RBL in creating sustainable learning ecologies are noted, and conclusions drawn.

Chapter six: makes recommendations on the use of RBL in creating sustainable learning ecologies in higher education. Details re given on limitations and strengths of the study, CDA, of RBL, the contribution of RBL to higher education, the

contribution of this study to academic knowledge and the implications for further research. Lastly, a conclusion is drawn.

5.4. THEMES IDENTIFIED IN RELATION TO THE OBJECTIVES

Themes play a crucial role in the interpretation of the data from qualitative studies. Fairclough (2010:14) posits that:

...one consequence is that we should assume that no analysis of a text can tell us all there is to be said about it - there is no such thing as a complete and definitive analysis of a text. Themes would be compared to give the meaning and interpretation also repetitive of words provides an insight of themes. It means that the themes are the responses of the research question.

It is important to note the diverse themes that pop up during the research discussion with the co-researchers. They reflect the thinking, nature of learning, how students understand their learning disciplines and the context in which learning is offered. From the data gathered, various themes were stated. According to Ryan and Bernard (2003:88) they are induced from empirical data, from text, images and sounds. The table below shows the main themes identified in this study;

Table 5.1: Themes, meaning and immediate context

THEMES	MEANING	IMMEDIATE CONTEXT
Textbook	It means the source or the material used for learning purpose	From all the co-researchers what had been stated by the word “textbook” is the source of the learning information. It is the resource and the tool or instrument used for learning.
I	“I” means the actor and the first narrator of a discourse	“I” as the primary source is the person. It shows and reflects the confidence of the speaker, not attributed to the secondary source. Here one cannot make assumptions because only one voice is recognized, that of the narrator.
Me	It is the self-assertion modalized	In this context of self-assertion it is the most dialogical, because the speaker is self-assertive, in the claims used.

Challenges	Empirical encounters of the experiences of the co-researchers.	The challenges in this text of the co-researchers are posed from the context of discourses and the genres. Genres reflect the way of acting, meaning the co-researchers act upon the challenges as the concrete vents faced by them (co-researchers)
Big	Description of the resources. Two critical factors were named by the researchers: the language and the textbooks which were seen as 'big'.	The context which the word "BIG" was used. From the three major types of text meaning named by Fairclough the co-researchers mean big in aligning with the context of identification. They identify the tools they were using as 'big'.
Internet	Internet as learning tool or resource was used frequently by the co-researchers.	In this case the discourse can be regarded as one-way and mediated, because the co-researchers were in front of the computer. According to Fairclough (2003:77) the increasing complexity of the networking of social practices in contemporary societies is linked to new communication technologies – telegraph, radio, and more recently electronic information technology (e.g., Internet).
Chair	Learning tool	The chair is viewed from the context of an artefact of the learning process. It can make a connection between the main themes and sub-themes, sourced out from the extracts of the co-researchers. It is critical to note that themes are visible and can be expressed on the other hand.
Large	"Large" also includes social element which is cohesive and its structure is the same. Sharing of the same social structure and the problems of the same group.	The co-researchers view of "large" as a description of their situation in the lecture halls. Text from the co-researchers describe, theorize and talk about their experiences
Support	For example, student lecture support or opposite, is the assistance and the help from tools and learning resources.	It was viewed from the context of an element of social life which is interrelated.

Group	Perceived as part of aspect of discourse and social activity	The context of how the group was perceived was that of social roles, because you will find “I” within the group.
Lectures	Tool and secondary person.	The context in which the lecture is seen or perceived is that of facilitating the learning process. From the RBL context the lecture is seen as the equal partner and part of learning resource. Some of the co-researchers from their discussion perceived the lecturers as the authority.
Time	A critical element mentioned by the co-researchers	Learning occurs for a length of time within the perceived context.

Within the broader framework, language and communication are instruments in critical discourse analysis. Face-to-face communication, virtual learning and online learning involve flexibility of the learning time and collaboration. In interpretation of the text, extracts of the co-researchers are crucial in answering the question arising from meaning of words and the message from the text.

According to Ryan and Bernard (2003:85) theme identification is one of the most fundamental tasks in qualitative research. It signifies the importance of words and listing the themes helps explain, interpret and compare what the co-researchers have in common and their difference views on the same observed phenomenon: “Without thematic categories, investigators have nothing to describe, nothing to compare, and nothing to explain” (Ryan & Bernard, 2003:86). According to Forchtner (2010:18) different approaches of CDA are used to critique in different ways, due to due to their different underpinnings.

5.4.1 Identified RBL tools suitable for the creation of sustainable learning ecologies

Education systems have gone through profound change, including the method of teaching and learning. Universities are competing for the best students and staff. Both urban and rural universities face a challenge of providing the activities in which students can actively participate. The diverse set of activities are mostly based on the tools and resources available to offer effective and quality education

The co-researchers indicated that they could engage in learning activities provided they had learning resources to use. They indicated that they used the Internet to search for the information, comprising an RBL tool because it can make education accessible to all individuals in both rural and urban areas. As noted by Greenhow, Dexter and Riedel (2006:6) that online resource-based learning environments are most likely to be effective when they are designed and used in ways consistent with the research on how people learn, taking into consideration the student at the centre of usage of learning tools. It is a learner-centred environment in which learners participate actively with their learning tools.

Most of the co-researchers had been exposed to Websites and electronic resources, for example *BlackBoard*, as a learning tool. However, as Greenhow et al (2006:6) stated, effective Websites might include Internet-based networking to promote continuing reflection and feedback on field experiences in a manner that is sustainable, wide-reaching and affordable.

The other tools indicated were lectures, textbooks, classrooms or lecture halls. Based on the Internet, the co-researchers had limited knowledge of the in-depth usage of the Internet. This is often seen as a value-neutral tool that potentially allows individuals to overcome the constraints of traditional elitist spaces and gain unhindered access to learning (Gulati, 2008). Co-researchers in the discussions did not dwell on the key dimension of online learning environments checklist as noted by Greenhow et al. (2006:7). In the following table the two key dimensions relevant to this study were noted as more relevant.

Table 5.2: Key dimension of Online Learning Environment (checklist from Greenhow et al., 2006:7)

Possible Features of knowledge-centred, online learning environment
<ul style="list-style-type: none"> • Hyper-linked resource area (e.g., links to content area standards, current research on Methods and Learning Theory, etc.)
<ul style="list-style-type: none"> • Digital content area, curriculum or resources focused around specific issues or themes that is up to date, authentic, accessible and generative
<ul style="list-style-type: none"> • Electronic networking forums to support knowledge sharing (e.g., Web-based libraries of: videos of teachers and accompanying descriptions exchanged, reviewed, annotated and linked additional resources; lessons plans; journals entries; student work

<ul style="list-style-type: none"> • Interactive design tools(curriculum design tools) with electronic prompts to scaffold thinking • Electronic notebooks encourage reflection in design process • Interactive survey instruments encourage reflection on work place practices
<p>Possible features of a learner-centred, online learning environment</p>
<ul style="list-style-type: none"> • Data in graphical, text-based, multimedia forms, acknowledging diverse learning styles
<ul style="list-style-type: none"> • Searchable online database through which users can search the site by a topic of interest to support professionals in important aspects of their daily work and let them easily and quickly finds what is of interest to them
<ul style="list-style-type: none"> • Customization according to users preferences and knowledge (i.e., through Web-based tools such as search engines, data bases, conversation tools, simulations, visualizations, and learning environments to give users the ability to initiate discussion strands, import objects, attach files, store work, download software. Post notes and publish work, or add sound and video to online workspace).

Unlike traditional methods of teaching and learning, *WebCT* and *Blackboard* have provided space for quality in higher education. RBL is appropriate as a multi-method approach in teaching and learning. It is a learning space in which co-researchers of students have opportunities to access education, regardless the institution's location. The table above only shows two of the key dimensions of four named by Greenhow et al. (2006:6-7). The two key dimensions named in the table above are important in that they provide the following critical factors according to Greenhow (2006:6):

Firstly, "knowledge-centred environments focus on developing knowledge of the field or discipline and of strategies to develop expertise. They incorporate the language, artefacts, and essential principles on which learning in the discipline is based and model how experts work with those principles to gain increased understanding".

Secondly: "Learner-centred environments focus on learners, building on their strengths, interest and needs. They take individual learning styles and prior knowledge into account. One of the most promising and under-appreciated qualities of new information technologies is their interactive capacity".

5.4.2 Contexts for the creation of sustainable learning ecologies

There are a number of contexts in which sustainable learning ecologies are created.

5.4.2.1. Social context

As Hannafin and Hill (2007:529) argued, context typically enables multiple issues to be identified. The few co-researchers in this study are part of the community, and social context was viewed as the external context, which plays a vital role. Families of the co-researchers play a significant part in emotional support, material support, and as one of the co-researchers said: “*Ya! It’s good, because it is a study about behaviour also includes “ke hore” (meaning it concerns with animals and behaviour and things we do)*”. The animals here are domestic or campus animals, part of their living and ecology, and she was referring to the behaviour outside the family system and campus ecology. The “things we do” meant occurrences on or outside the campus. The context of learning suits the co-researchers and the lecturers, in this case not viewed from a single perspective but complex if not diverse viewpoints.

5.4.2.2. Individual learning context

The individual learning context differs according to individuals’ views. The co-researchers had different viewpoints as RBL is not an instructional method or way of teaching. The context is interpreted in different way by different individuals with a need for RBL to create a stimulating ecology so that there can be equality, freedom, balance and emancipation amongst all the stakeholders. The co-researchers at a minimal level showed creativity, cooperation and a certain level of competence, as evident when they were given a collage to create. The response from one co-researcher was: “*For I, working in a group was very enjoyable. It made the work load easier and more manageable*”. Different learning contexts create changes in education:

... the UNESCO website the United Nation Decade of Education for United Nation Decade of Education for Sustainable Development (DESD), spanning from 2005 to 2014, breaks down the traditional educational scheme and promotes, among a variety of desirable aims (an interdisciplinary and holistic learning rather than subject based learning, a values based learning, a critical thinking rather than memorizing, an involvement into a participatory decision-making, addressing local as well as global issues), also multimethod approaches which use word, art, drama, debate, experience and different pedagogies which model the teaching and learning process) Reti and Tschapka, 2012:53).

RBL and CER promote creativity, engagement and participation in the whole process of learning.

5.4.2.3 Individual will and capability

In terms of the tools or learning resources one co-researcher said that: “I use to search sometimes, how to search Internet”. The traditional method of teaching and learning do not allow the individual will or encourage it, or the capability of the co-researchers, however, RBL promotes the individual will through action and reflection of the activities which are at risk.

5.4.2.4 Forethought, action, capability and perform

Resource-based learning encourages the generation of ideas from the students, known as “forethought” by Jackson (2013:4), whilst Inan, Flores and Grant (2010:52) stated that content presentation and sequencing, adaptive self-regulation, and adaptive assessment and feedback were found to increase student learning. The ability of co-researchers in this study showed that they could take action and show capabilities if they adapted well to the content presentation. RBL aims to provide students with the ability to act so that they can perform. They show that they can engage in certain activities and acquire skills.

Grant (1991:123) wrote of 'economies of experience' he mentioned that just as individual skills are acquired through practice over time, so the skills of an organization are developed and sustained only through experience. What RBL and the co-researchers experienced can only be achieved through practice and engagement. The capabilities shows some complexity may be derived from the contribution of the single resource.

The lecturers in the lecture halls had to be partners with the students, not the authority. The importance of RBL is that opportunity, access, and equality should govern the learning process. Lecturers in RBL design courses or modules as facilitators, promoting student involvement and interaction, therefore the students can perform optimally in given projects.

5.4.2.5 Reflection, meaning-making and time

During the collage programmes students learn from reflection and so were able to ascertain meaning from what they had been engaging in. Time was an intrinsic part of the collage, as shown in the figure below.

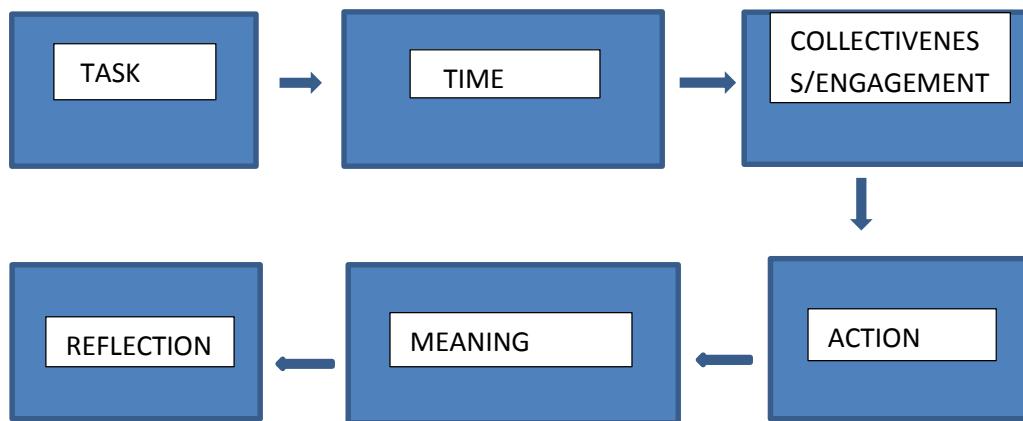


Figure 5.1: Process of engagement

The figure shows how the co-researchers went through their given tasks in RBL, CER and Action Research. The first step is to give the students a task, followed by the timeframe in which to complete it. The active engagement was undertaken by group interaction, referred to as 'collectiveness'. From the discussion of the group

the meaning was created after the action had taken place, and the students reflected upon the work they have completed, which also required time and space:

Learning is not confined to pre-specified times or places, but happens whenever there is a break in the flow of routine daily performance and a person reflects on the current situation, resolve to address a problem, to share an idea, or to gain an understanding (Sharples, Corlet, & Westmancott, 2002:220).

Learning is not ideologically, physically or emotionally bound, but occurs continuously and daily.

5.5 SYSTEMS

As Jackson (2013:8) noted that ecologies are living systems containing a diversity of factors that interact organically. The graphic presentation below shows ecology in the broader sense from a pedagogical viewpoint.

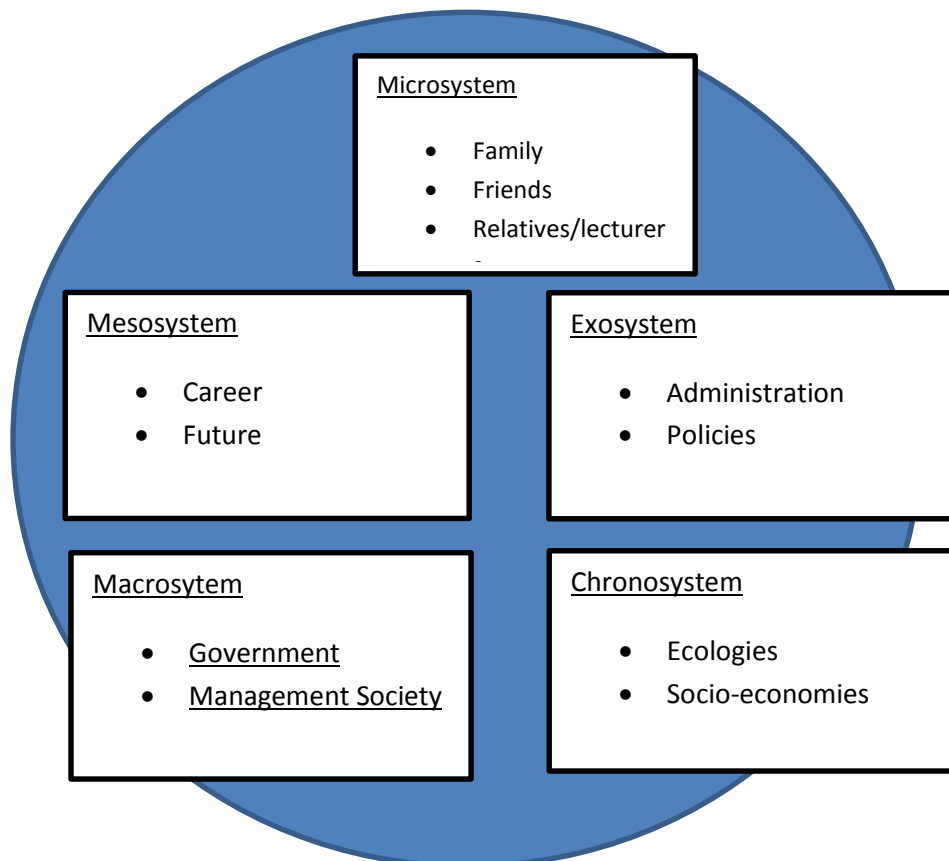


Figure 5:2: Ecology from a pedagogical viewpoint

The world is a system with its own advantages and disadvantages, but the ecological and learning systems do not exist as separate entities but rather cooperate and operate as a whole. The learning institution as the system has to take into account the humanity of the student.

A Green Paper on Higher Education Transformation (1996:3) stated that South Africa's transition from minority rule under apartheid to that by a government elected through universal suffrage requires all existing practices, institutions and values to be viewed anew, and rethought in terms of their fitness for the new era, therefore the functioning of the learning ecology and creation of sustainable learning ecologies can be created through the effectiveness of interrelationships between the national systems.

5.6 SCAFFOLDING RBL TEACHING AND LEARNING EXPERIENCES FOR THE CREATION OF SUSTAINABLE LEARNING EXPERIENCES

The data of this study showed that support for the co-researchers was not enough, but rather scaffolding was a part of the learning process. For a child to learn to speak and walk she/he must be assisted and helped in their learning process, which good methods of scaffolding can be of use in facilitating. Amongst different contexts of scaffolding one of the co-researchers said that "*The textbook had bombastic words*", highlighting a need for scaffolding. RBL promotes self-directed learning, and as Song and Hill (2007:35) stated that the level of responsibility for seeking assistance is also much more centred on the learners since they are directly involved in monitoring the process, and seeking resources to improve the situation as needed. Scaffolding was found to be useful in pedagogical terms.

I argue that traditional methods of teaching are not suited to the current trends of teaching and learning. The findings suggest that there was a support from the lecturers for the co-researchers in this study and there is reciprocal teaching, such that the teacher models the reading skills to the students. However, in this study RBL promotes collaboration and coordination of the work, with both the lecturer and co-researchers on an equal footing.

5.7 OPTIMIZING RBL AS AN AGENT OF CHANGE

The findings relevant to challenges in optimizing RBL as an agent of change for sustainable learning ecologies may be compartmentalized into several factors;

Use of traditional methods of teaching and instruction do not facilitate the effectiveness of making RBL an agent of change. Challenges include language and context in the form of learning spaces. Butler (2012:221) believed that in the RBL model described in British academic legal literature, teachers must pay “careful attention to pedagogy, including learning outcomes to be achieved by students from the projects and method of feedback”. In this study, RBL can be used as the agent of change, and as Butler (2012:19) added, RBL approaches have great potential to be helpful not only in research courses in which students are asked to consider challenging problems, but also in clinical work and other project-based law school work. RBL can thus be an optimizer and work as an agent of change, for example, to change the traditional fashion of teaching and bring equality and freedom to students.

Empirical challenges, labelled by Freire as the ‘pedagogy of the oppressed’, are such that so long as there is inequality in social structures of society there will be inequality between races and thus also between the course designer, students and educational authorities. The other practical issue and challenge indicated by the co-researchers was that the learning spaces and unequal distribution of learning tools due to political and philosophical issues was a concern. However, these challenging factors can be overcome when there is equality and sharing of learning resources. I believe as a researcher that it is possible that RBL can be an agent of change in the higher education sector.

Another factor is economic, and as one of the co-researchers said “some of the students they do not have text books”. It was evident that finances can be a problem in optimizing RBL as an agent of change, and without optimization RBL as an agent of change cannot be sustained. For RBL to change the current status quo, finances have to be given to the higher education sector. Policies were also detected from the data gathered from the co-researchers. To be the source of change RBL implementation can be hindered by political or educational policies by authoritative

management. Conversely, if they promoted equality and freedom in higher education people would benefit.

When checking at the philosophical underpinnings, different ideologies can hinder the optimization of RBL as an agent of change. Some cultures and individuals preferred to work individually rather than collectively, a challenge that can be overcome if good strategies and mechanisms are put in place. Governance was another factor that was found to hinder the process of optimizing RBL as an agent of change, mainly due to politics and economic structures. There is a need for authorities or bureaucratic structures to be accommodative, so RBL can optimize change in higher education sector. Lastly, knowledge management is a great issue of concern, to both co-researchers and the management. Lack of adequate training would jeopardize the implementation of RBL as an agent of change.

5.8 COMPONENTS OF THE SOLUTION

The findings suggested a number of possible components of use in solving the problems.

5.8.1 Usage of current and new methods of teaching and learning

The findings related to the current and new methods of teaching and learning were discovered through the data gathered from co-researchers. As discussed in the previous chapter, traditional methods of teaching and learning are not viable or recommended in this present area of higher education:

Learning has moved into centre stage of public debate and private concern. Never has been such concern about education, so much worry about its problems, so much excitement about new prospects, so many ideas generated, so much money spent, so many developments that dramatically demonstrate that learning is on the move (Papert & Markowsky, 2013:3).

Teaching and learning has gone through many changes, whether ontological, epistemological or paradigmatic, and methods in which the teacher was 'above' the

students are no longer advocated in most countries. During the discussions with the co-researchers a need as found for teachers and lectures to become equal partners in the learning process. The new pedagogy, for example the usage of RBL, propagates the notion that teachers or lecturers and students are learning partners.

The current use in some countries of learning methods such as surface learning and deep learning have the assistance of technology, but according to Fullan (2013:23) there are fundamental structural and policy matters to be considered in relation to standards, assessment, governance, and organization of schooling. With the use of new pedagogy and RBL the teachers and the lecturer are facilitators rather than instructors, engaging in simulations and gaming, modelling, project-based learning, RBL, problem-based and web based learning.

The new methods of teaching are effective if the resources are available and are more user-friendly to both students and the lecturers. It was indicated by the co-researchers that the Internet was used frequently, as were other technologies, allowing virtual participation and accessibility of education to the students residing in remote areas. The Report to the European Commission: New modes of learning and teaching in higher education, 2014:4) noted:

Within higher education, new technologies have enormous potential to affect change. They enable the universities to meet a broader range of learner's needs, adopting traditional teaching methods and offering a mix of face to face and online learning possibilities that allow individuals to learn anywhere, anytime, they also create openings to engage in new kinds of collaboration and offer opportunities to distribute resources more effectively, given the societal and economic potential that can come from harnessing technological innovation in higher education".

It is important that the world and the relevant stakeholders take control of this space.

5.8.2 Training and learning skills for the new technologies

The world is unequal, with rich countries having the capital and resources for their students in higher education. On the other hand, developing countries lack learning

resources and adequate training for the staff to teach in the new paradigms, for example using ITC and other technologies.

The economy and political stability were also found to play critical roles as new methods of teaching. For example, RBL requires a qualified person to facilitate the learning process and implement it. Some students, especially in developing countries such as South Africa, have been introduced to the use of computers and Internet as modes of learning at the late stage of their schooling. Training good teachers to be effective in enhancing learning through technology can be an investment which the university and the government can make in higher education. According to Kirkwood and Price (2014:3) since the 1990s there has been considerable growth in the adoption of technology within higher education. Using technology can be costly, not only in terms of support staff but also in relation to the personal investment made by staff and students in using technology for teaching and learning. On the other hand, Cuban (2001:131, in Kirkwood & Price, 2014:4) observed that:

The overwhelming majority of teachers employed the technology to sustain existing patterns of teaching rather than to innovate ---[and that]--- only a tiny percentage of high school and university teachers used the new technologies to accelerate student centered and project based teaching practices.

However, Black students in under apartheid were not privileged to access learning resources equally with their White counterparts so it is important to introduce them to technological devices that can sharpen their skills.

5.8.3 Effective usage of learning spaces

Since learning spaces “should be able to motivate learners and promote learning as an activity, support collaborative as well as formal practice, provide a personalized and inclusive environment, and be flexible in the face of the changing need” (HEFCE,2006:3), they have an influence on the teaching and learning process. RBL is applied in a space with enough space for the activities and projects to be executed. Large number of students was a problem as the interaction was not functioning well, and so was not appropriately monitored by the teacher or lecturer.

This would not facilitate the effective implementation of RBL. Alterator and Deed (2013:315) stated that the advantage of open space classrooms includes flexibility, visibility and ease of scrutiny, with less emphasis on authority and better teacher reactions, collective practice, team orientation, increased interactions and a democratization of authority. According to Gulson and Symes (2007, in Alterator & Deed, 2013:315) the 'open classroom' originated and continues to evolve as a multi-disciplinary reaction to perceptions of alienation, authoritarian control, restrictiveness, and stability of conventional classrooms and schools.

5.8.4 Supporting students in their learning process

Student support is vital in increasing the independence and freedom of students in the learning process. The skills involved in support for students is twofold, namely, student self-regulation and a shift from reproductive to productive learning. The role of the lecturer and students would be clearly marked, as a student-centred approach rather than teacher-centred one as instructional discourse shifted to a regulatory one in which the learners took an active role in framing the curriculum.

Support can take many forms, for example, emotional, financial, technological and psychological: "Educators and researchers point to the increase motivation and engagement of learners that cater for different potential of technology learning styles and improve learning outcomes" (Eady & Lockyer, 2013:73). The importance of technology today in higher education is so serious that major support mechanisms had to be implemented. Eady and Lockyern(2013:73-74) stated that with technology now being part of everyday life it is time to rethink the concept of integrating technology into the curriculum and instead aim to embedding it in pedagogy, to support the learning process. The support also can be from the students themselves, if they share their ideas on a given project. Student collaboration is also perceived as support, which facilitates learning in higher education. Language and communication from both teachers and students can also be a source or tool of learning supporting students in higher education. I argue that support can be linked to preparing students to act, engage in an activity or provide information on how, what, where and when the project needs to be conducted.

According to De Witt and Storksdieck (2008, in Remmen & Froyland, 2015:119) preparation enhances student learning during outdoor activity, whilst Orion (1993; in Remmen & Froyland, 2015:119) recommends teachers include three aspects in the preparation of students. Firstly, cognitive preparation involves presenting concepts and materials students will encounter during the fieldwork. Secondly, psychological preparation involves information about the schedule, tasks and how to use equipment. Thirdly, geographical preparation is ensured by having students study maps of the fieldwork settings.

5.9 THREATS TO USE OF RBL IN CREATING SUSTAINABLE LEARNING ECOLOGIES

A number of threats were found to the use of RBL in creating sustainable learning ecologies

5.9.1 Students' personal independence and dependence

Education is the key to success but within its boundaries are human beings, notably the students who are at the centre of the whole process of teaching and learning. The higher educational system should foster free will, independence and interdependence amongst the lecturers and the students. Connection with others can sanction sustainable learning amongst the students. The use of RBL has found that if students are confined in a strict mode, when the lecturers instil fear, students will not be able to actively engage in the learning process.

Instructional modes of teaching and learning impede student activities and interdependence. CER encourage critical thinking and emancipation and encourages students to engage and participate in activities relevant to learning. Those, who are controlled can experience lack of motivation and personal control and mastery of the work allocated by the lecturer. When freedom of students is blocked it can negatively result in frustration and restraining student participation in RBL activities.

5.9.2 Educational dominance over student learning

Economy and politics have dominated education systems in some parts of the world, with the powerful race group dominating. The major threat to the use of RBL is such domination, when some groups do not get a chance to raise their views. The instructional or traditional method of teaching was dominated by teachers and lecturers, as they set the curriculum and determined the pedagogies of teaching. On the other hand, the concept of educational dominance can entail forceful control or command over the students. The ideal classroom sees the teacher interact with the students (amicable relationship), whilst his or her behaviour may be compromised by excessively strict management of the class.

5.9.3 Unavailability of resources

The political history of South Africa has had a significant impact both on basic and higher education. The educational system had seen high failure rates among the Black matriculants and unequal distribution of resources and tools of learning in both high schools and universities. Modisaotsile (2012:5) stated that:

...education is about much more than children sitting in classrooms, acquiring skills that can be objectively tested. Both the inputs to, and the outputs from, education are far more complex than much of the usual international discourse suggests. The inputs to education are described in technical terms, such as optimal pupil to teacher ratio or availability of chalk and textbooks.

Unavailability of learning resources can undermine the educational system and society will not be able to structure itself, and industries will run short of team leaders and critical thinkers. Lack of equal distribution of resources due to the economy and politics does not facilitate equality amongst the population.

Equal access to education contributes to equality in society and holistic equity in all spheres of life. Learner Teacher Support Materials (LTSM) include any tool or resource used to enhance teaching and the understanding of the subject content (Sedibe, 2011:129), and the inequalities of access to resources, according to

Sedibe, led to social and civil unrest. The outcome of unequal distribution of resources also caused problems for RBL in higher education.

Unequal distribution of resources was aimed not only at higher education but also whole educational system. As Sedibe (2011:129) reported, political instability has led to disruptions of schools and centres for political indoctrination, leading to strikes and class boycotts, with the aim of demanding a change in Black institutions of learning. RBL would therefore not be properly used and the creation of sustainable learning ecology would be postponed.

5.9.4 Language and communication issue

Language and communication are vital tools to transmit information and knowledge to the students. South Africa has 11 official languages, which are enshrined in the Constitution, but due to the history of politics in the country Black students are still lagging behind as they are taught in English and Afrikaans languages, which are not Black South Africans mother tongue. Language is critical in education and cannot be separated from one's culture, identity, norms and beliefs. These create a viable system of transmitting education. Student's performances and achievement in the usage and understanding RBL in higher education can be negatively affected by of the use of the foreign language. Visser, Juan and Feza (2015:2) noted that "leaners perform better if the language of learning and teaching is the same as the language spoken at home". With South Africa being a multilingual country, this variable needs to be acknowledged in practice for the benefit of leaners. Inequalities in gender also require attention, and as Wabiri and Taffa (2013; in Visser, Juan & Feza, 2015:2) stated, the socio-economic differences in the educational system are strongly connected to ethnicity and gender.

5.10 SUMMARY

This chapter has highlighted the findings of this research study, notably a link between the objective of this study and what co-researchers provided from the data gathered and identification of themes. The main tools used by the co-researchers

in their ecologies were also stated and the context for the creation of learning ecologies indicated. The following chapter make recommendations based upon the findings from this research data.

CHAPTER 6

RECOMMENDATIONS ON THE USAGE OF RBL IN CREATING SUSTAINABLE LEARNING ECOLOGIES IN HIGHER EDUCATION

6.1 INTRODUCTION

Chapter 6 makes recommendations on the usage of RBL in creating sustainable learning ecologies in higher education, and findings in relation to the objectives of this study will be detailed. The recommendations are not forced but optional, as a different case provides different conclusions and suggestions on the solution of the problem under investigation. The weaknesses and the strengths of RBL are discussed, notably the contribution to this study of 'knowledge creation'. Lastly, a conclusion remarks will be drawn.

6.2. FINDINGS BASED ON THE OBJECTIVES OF THE STUDY

Findings are linked here to objectives of the study.

6.2.1. Objective one: identifying RBL tools suitable for the creation of sustainable learning ecologies

In their study, Hannafin and Hill (2007:529) identified four types of RBL tools which are mostly used in higher education (see chapter 2), namely communication, manipulating, processing, and searching. The usability of tools is significant for the creation of durable and sustainable learning ecologies. However, in this study the tools identified were mostly the Internet, e-mails, BlackBoard and mobile telephones. The tools identified from this study were used for teaching and communication purposes, identified by the co-researchers as being used in their everyday activities. Higher education can facilitate sustainable learning ecologies in higher education as RBL tools relate to CER through emancipation and facilitate the creation of sustainable learning ecologies.

This study had achieved its first objective one, because learning ecology was taken into clearer understanding. Also the students' contexts and their individuality were taken into consideration, and the tools identified made co-researchers trust themselves. Several authors (Jackson, 2013:17; Jordan, 2013, 120; McCarthy, Grandall, Whitelaw, General & Tsuji, 2011, 18) have found that the ecological view of the relationship between learning, developing and living will help prepare student learners for the ecological world of organizations they would inhabit when they progress into work and raise their awareness of the important link between their learning ecology and a sustainable life. The findings of this study reflect that ability zzzzh help them progress and live a sustainable life. Through using RBL the creation of sustainable learning ecologies can be created.

I recommend that the resources and learning tools be distributed equally and to all students. The abovementioned tools, especially technological, help make education accessible. However, even the more remote rural areas can use learning tools to create sustainable learning in higher education. RBL used in the emancipatory role leads to creation of sustainable learning ecologies in higher education.

6.2.2 Objective two: context for the creation of sustainable learning ecologies

The creation of a context for the creation of sustainable learning ecologies in higher education was found to be multifaceted. Individuals and the co-researchers had different views when coming to identifying the context in which learning takes place. In this study the facilitators had their own view of learning context, which was different from the view of the co-researchers. McCarthy et al. (2011:18) identified the social context, which includes integration of typology of knowledge, critical reflection and scale of ecological structures to provide an opportunity to map a trajectory of social learning in a particular social ecological system context. Learning does not occur from only one perspective. The emancipation and empowerment of individual co-researchers also benefit the ecological learning, including how co-researchers view the learning process in relation to other structures that exist within the broader community. Learning does not occur in isolation but as a result of social interactions. The creation of social context should be an inclusive education, which can be sustainable and include society.

Sustainable learning ecology is best viewed from the different contexts. Ellis and Goodyear (2010:136) note that the idea of a university as a context and as an ecology of learning resonates with some recent international developments in planning and researching learning spaces. It is vital to create the conducive learning context through the physical spaces within and outside the vicinity of the university.

By using RBL to determine the learning context is flexible because learning can happen anywhere at any time. Determining the context for the creation of sustainable learning ecologies can be beneficial to students in many ways. First, they can be motivated and develop a sense of willingness. Secondly, they can develop an emancipatory feeling with which they can optimally use to their potential. Thirdly, individual willpower would be encouraged and a strong sense of personal agency from the students encouraged.

In chapter 4 of this study the co-researchers talked about the lack of adequate venues in which to study. Creation of adequate learning spaces would bring a sense of freedom and personal beliefs for the students. In this case the determining of the learning context can create sustainable learning ecologies. Determining the learning context would allow students to see a broader picture of the learning process. Their creativity and actions can be modelled towards more productive learning. Determining the context was found to be inclusive, whereby participation would come from the society (larger system) and its elements (students).

My argument and proposal is that the learning context should be conducive to using RBL in creating sustainable leaning ecologies in higher education. There was an indication of personal learning context and social context in which learning is offered. Creation of learning context would motivate students to engage in learning activities. Individual perspectives on learning needs to be taken into consideration when planning the curriculum so as to make the learning context flexible.

6.2.3. Objective three: Scaffolding RBL teaching and learning experiences for creation of sustainable learning ecologies

Puntambekar and Hubscher (2005:3) considered that the key theoretical feature of scaffolding is the support provided to the learner so that the learner is in control and

taking responsibility for learning. Scaffolding was understood from different perspectives, as a learner agency and supporting the needs of the learner. Scaffolding using RBL in teaching and learning for creation of sustainable learning ecologies was found to be important in this study. Firstly, students should be independent but the lecturer should guide and help them to be so. Secondly, the students should be exposed to practical skills in learning.

RBL students work in small groups (collaboratively) rather than individually and the teacher would be the facilitator, not a dominating or authoritarian teacher. Scaffolding was seen not as a permanent structure but as a temporal structure because the scaffold is removed when the construction is completed. Teaching and learning methods that include scaffolding are appropriate and relevant to the principles of emancipation, freedom and empowerment. For example, in a project in which the students have to use technology the role of the lecturer is to guide or support students on how the machine is used, then they have to be given autonomy to complete their project without the lecture.

Connections develop as the child interacts with other individuals and their environmental surroundings. One of the findings was that the good implementation of scaffolding strategies can be of vital use so students and the rest of the university can benefit from the positive success rates and output rates. Cerillo (2014:2) stated that education for sustainability fosters the following factors: (1) real-world skills applied towards responsible ends; (2) equity, justice, inclusivity, and respect for all people; and (3) a pedagogy that encourages creativity, vision, compassion, cooperation and collaboration in every student and teacher.

Using RBL in creating sustainable learning ecologies in higher education, support, respect and cooperation can thus foster sustainable learning ecologies. Supporting the students in their work encourages active engagement and participation. Dialogue between the teacher and the learner passed on modelling skills while reading a text, such as asking questions and rephrasing, such that the learner gradually took on greater responsibility for controlling the collaboration, eventually assuming the role of the teacher. There are differences in the scaffolding concept, whether *instructional*, whereby the students are instructed to complete a certain

task, *assisted*, which can be linked to helping a child to walk, or *guided*, whereby the lecturer guide the students to execute a certain task.

Scaffolding is not fixated or permanent, but it is temporal. As stated by Vygotsky's ZPD, the child needs parental support but should be independent. The idea of RBL is to create an independent student who can think critically, assess and measure his or her actions in pursuit of a sustainable life and education. Therefore, the importance of scaffolding RBL teaching and learning experiences for creation of sustainable learning ecologies is vital.

6.2.4 Objective four: Optimizing RBL as an agent of change for sustainable future

To optimize RBL as an agent of change for sustainable learning ecologies in higher education the exploration of various areas is required. RBL is different from traditional methods of teaching and learning, with the educational and academic sector having been evolving for a many years.

The findings include the following factors that reiterate the fourth objective of this study, that RBL can be used as an agent of change as it brings modern or current methods of teaching. The ontological and epistemological changes from the previous epistemologies and pedagogy of teaching and learning can take place from a distance (virtual), not through face-to-face teaching, which is a change that RBL can bring about.

It was also found that by using RBL and technological devices the material-based, embedded learning, and project-based learning had brought about changes in the autonomous base of traditional learning process. In using RBL as an agent of change, Song and Hill (2007:23) indicated that the personal attributes are characteristics learners bring to a specific learning context. This shows that RBL takes into consideration the prior personal experiences of the students, and so brings change to the learning environment.

Technology used in RBL teaching and learning has also marked a significant change for creation of sustainable learning ecologies for future. RBL is a change

agent as it has the potential to include students in their academic planning and team interaction. RBL can be used as an agent of change, because it brings about engagement, which differs from the traditional methods of teaching and learning, wherein the teacher was an authority and students merely passive recipients of information. The RBL can bring about change by facilitating convergence and coordination.

RBL brought about emancipation and transformation, which are better ingredients of sustainable learning than the conservative thinking and approach to learning. CER and RBL had influence and an ability to change from dominant to more critical discourses that questioned the traditional ones. RBL and CER had changed the mentality of the researchers and academics alike by arguing that research methods and tools were not solely for power, and social inequalities could be redressed as the dominant discourses were challenged. The fourth objective of this research was achieved through the information mentioned above.

The following factors were marked as important in optimizing RBL as an agent of change for sustainable future. The change in ontological and epistemological principles in relation to teaching and learning was such that RBL changed the pedagogy of teaching and learning. It brought about cooperation and collaboration in teaching and learning. The use of technological devices replaced traditional methods of teaching to new pedagogies. RBL brought about equality and freedom in teaching and learning, while RBL can be used as an agent of change in creating sustainable learning ecologies.

6.3 OBJECTIVE FIVE: RECOMMENDATIONS

As researcher I believe that RBL is a good learning mechanism, because it is not a complex but rather a flexible learning method of teaching and learning, occurring in parallel scenarios and ways. Teachers interact with the students and the students with one another. RBL uses simple tools and resources to transmit learning and can also be used in open learning. It can be viable and used in transmitting information in a circular form. The reflexivity of information from the students and teachers

encourages flexible delivery of learning resources. RBL in another way is a supplement for instructivist teaching and learning methods.

Emancipation of students and learners is accommodated in RBL as they are not simply an audience but rather autonomous and active participants, engaging in their own learning products. RBL promotes the constructivist idea that students construct their learning environment and lessons. Students take an active part in designing their curriculum, as central to their learning. RBL allows each student to use different tools and resources for a specific project. *PowerPoint* presentations and computer laboratories can be used for different projects and students can use the abilities and technical skills. The advantage of the RBL is that it uses a combination of theory and practice with students free to choose among all facilities to execute the project. Student can use both print and non-print materials to execute their work or project.

Important in RBL is the university campus itself and the learning spaces are within the ecological system of learning. This comprises the infrastructure and outside the university structure, whether villages or towns from which the students come. These are also learning spaces which are not side-lined by RBL, but are included.

From a psychological point of view, learning space create a sense of identity. Interior spaces create freedom and peace of mind. In the use of RBL, lecture halls are not fixed, as learning can occur outside the university building and outside classrooms. Smaller spaces in which students are jammed are not productive or favourable for them. Open and conducive space creates comfort and a sense of belonging. One co-researcher reported that when they arrived late they were forced to sit on the steps, which is not a favourable learning ecology. Open spaces give the students a perception of control over the space and activities can be followed at will, within the visible and controlled environment.

RBL is a method that can bring change in teaching and learning, and bring social change. As MacCarthy (2011:17) wrote:

We need a new approach to environmental management that supports collective action and reflection directed towards improving the management human and environmental interrelations.

6.4 LIMITATIONS OF THE STUDY

This study had its own limitations and critique. The first limitation was that the number of co-researchers was too small, only ten in total. Secondly, the co-researchers were from only two ethnic groups, Southern Sotho and Zulu. In South African universities there are several ethnic groups, therefore this study had the limitation of not being generalizable to the whole population cohort in universities and colleges. A third limitation was that the study was conducted in a rural university which would be a problem in generalization of the findings to urban universities. Fourthly, the co-researchers were from one module offered in university, Psychology, however, the co-researchers from other modules were ignored. A fifth limitation was that English language was used, and the mother tongue of the co-researchers was not taken into considerations. Lastly, the module code which was originally the course under investigation was changed, as the code by the host institution in which the research was conducted. The original code was SIL 108, the new one PSIN 1514. It was same module with the same content.

The abovementioned limitations can be considered when conducting further research.

6.5 LIMITATIONS AND STRENGTHS OF THE CDA

Critical discourse analysis was used to analyse data and the interpretations were based upon critical analysis. Educational research has gone through ontological and epistemological changes. Different paradigms are used by different researchers in order to analyse the matter under investigation. The approach used in this study was from critical theory and qualitative orientation.

Because of the different paradigms the positivist, for example, might see the limitations of this study due to lack of experiment, use of standardized tests, systematic observation, survey data and statistical analysis. The limitation of CDA is that the data can be interpreted by the novice researcher or someone who is not a professional linguist.

There are however strengths associated with CDA, as listed by Fairclough (2003:3-7):

- Text analysis is an essential part of discourse analysis, but discourse analysis is not merely the linguistic analysis of text
- Critical discourse analysis is concerned with continuity and change at this more abstract, more structural, level, as well as with what happens in particular text
- Critical discourse analysis can in fact draw a wide range of approaches to analysing text
- Texts as elements of social events have causal effective, they bring about changes.

Qualitative methods are used in research which was previously not taken seriously as a science. But in this study it was based on a premise that the structure of the society was taken into consideration and the view of the co-producers of the data gathered are stated. The method of analysis of the data gathered was CDA, because the views of the co-researchers were seen as a critical stance to create knowledge.

In a point form, strengths of CDA are:

- The CDA take into account the moral, cognitive, social reality of all the participants of the research including that of the researcher;
- While analysing the data critical perspectives in the methodology and research objectives are taken into account, including for example the objectives of emancipation and social justice;
- Watson and Warson (2011:63) stated that incorporating critical theory into systems analyses stressed the importance of recognizing issues of power, oppression and emancipation in systems thinking and approaches;
- The researcher analysed the results with the co-researchers of the study;
- Based on the assumptions mentioned by Wodak and Meyer (2001:5-6), as articulated by Kress's work, the following assumptions are perceived as strengths of CDA:
 - Language is a social phenomenon

- Not only individuals, but also institutions and social groupings have specific meanings and values, that are expressed in language in systematic ways
 - Texts are the relevant units of language in communication;
 - Readers / learners are not passive recipients in their relationship with text.
- CDA is vital in disclosing the discursive nature of much contemporary social and cultural change
 - According to Wodak and Meyer (2001:10-11);
 - CDA is seen as an important aspect of establishing and maintaining unequal power relations
 - CDA is strong enough to 'demystify' discourses by deciphering ideologies
 - CDA emphasizes the need for interdisciplinary work in order to gain a proper understanding on how language functions in, for example, in organizing social institutions or in experiencing power
 - CDA has strength with power as a central condition in social life, and its efforts to develop a theory of language which incorporates this as a major premise
 - CDA takes an interest in the ways in which linguistic forms are used in various expressions and manipulation of power
 - "If texts are analyzed, they reveal the kinds of power relations buried beneath words. Discourses referred to evidence of political and ideological investment behind every text" (Nkoane, 2012:99).

6.6. WEAKNESSES AND STRENGTHS OF RBL

Only two weaknesses were identified in this study concerning RBL usage. The first is inadequate distribution of learning tools and resources, as RBL would not be

effective if the learning tools were too few. Secondly, RBL lack of adequate skills from the lecturers who facilitate the RBL approach is a weakness.

A paradigm shift has taken place in higher education by using RBL as an approach to learning. Teaching and learning have improved to accommodate new academic fields and type of students. Barr and Tagg (1995:15) stated that the learning paradigm, for example RBL, expands the playing fields and domains of possibilities and radically changes various aspects of it. In the instruction paradigm, a specific methodology determines the boundary of what colleges can do. In the learning paradigm, student learning and success set the boundary.

With RBL the students set goals, an act on achieving them. The sense of taking ownership and responsibility is encouraged. The students and the lecturer are on an equal footing in the learning process such that no one is the authority or dominating character over the other. Variations of tools and resources are used to complete the project or assignment given to the students.

RBL is not confined to the class but can be used outside the boundaries of the college or university. Learning and knowledge is shaped by individual experience and RBL is not individualistic, such that the mode of teaching is not linear but circular, as reflected in the following figures:

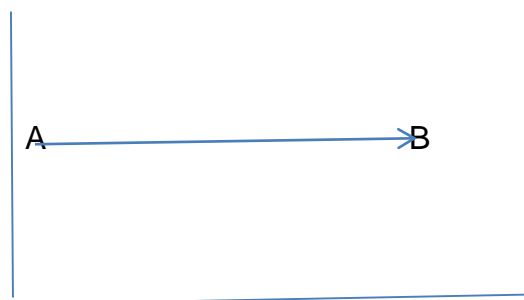


Figure 6.1: A = Lecturer; B = Student

The linear form of teaching and learning is the traditional method of teaching and learning. Learning in this form sees the teacher (A) instruct the learner or the student

(B). The student is at the receiving end of the information. This form of learning makes the students mere passive recipients of information with no engagement. In contrast, the circular form of teaching is shown below:

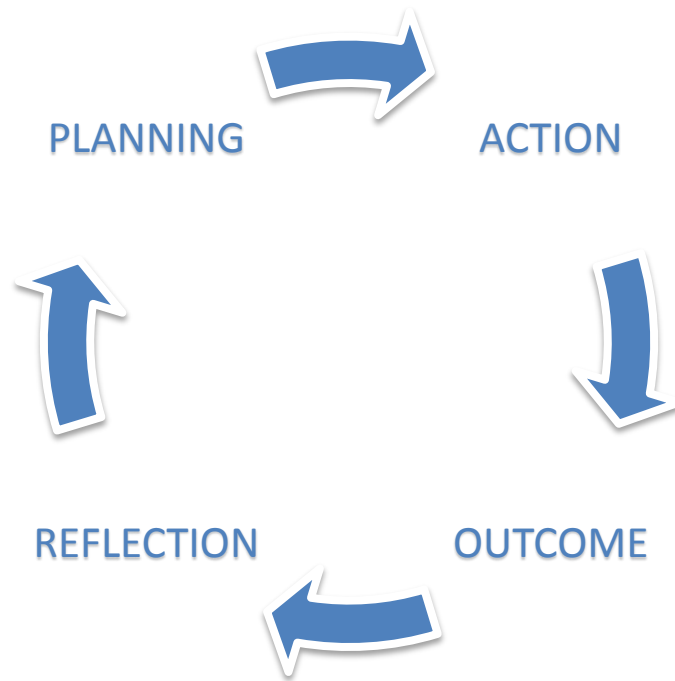


Figure 6.2: Indicates circular form of teaching and learning

In the RBL form both the lecturer and the students plan the project and there is an action in the execution of the planned project. The step that follows comprise outcomes, which are the results of the given assignment by the lecturer. Lastly, both students and the lecturers reflect upon the given work or the project.

A further strength is that team work is encouraged and sharing of ideas encouraged. RBL is used to empower the marginalized and the disenfranchised student in their learning fields, and it is sustainable.

6.7. CONTRIBUTION OF RBL TO HIGHER EDUCATION

RBL includes various approaches of learning and learning occurs within different disciplines, such that it contributes to higher education by being multidisciplinary. Cultural issues are taken into account, as is the environment of the students.

Knowledge about one's culture and the acknowledgement of that culture make it possible to accommodate the students. Another contribution was the acceptance of the existence of what is called 'social ecology', that is the interrelation between human beings and their environment. Therefore, learning ecology can take place.

The RBL contribution in emancipating the learning process encourages the diverse nature of humans to engage and be motivated to bridge the critical issue of diversity. RBL tools and resources enable students from different areas to engage in learning and the remote, rural, and urban residents can access it. As has been noted by Bleakley and Carrigan (1994:18), RBL engages the learner not only as reader-listener-observer but also as a writer-speaker-performer.

In an RBL the lecture becomes a guide and facilitator, and the learning process becomes democratic to both students and lectures:

By adopting a resource-based learning approach, based upon working and a variety of different sources of information, a level of student autonomy can be promoted that encourages a deeper understanding of the material provided (Jenkins, 2006:10).

It is important to note that RBL was recognized by the South African government on issuing of Green Paper on Higher Education Transformation (1996:19-20) mentioning the following factors regarding the contribution of RBL in higher education:

- Distance education and resource-based learning have a crucial role to play in meeting the challenge of greater access and enhanced quality in a context of resource constraints and a diverse student body
- Distance education based on the principles of open learning leads to the development of a system which is organized for use by learners at different times, in different ways and for different purposes at various stages of their lives and careers. It also means the quality and success of teaching are not dependent upon staff levels rising in tandem with increased enrolments, and it mitigates the underutilization of physical and human resource due to the structure of the academic year.

- The reorganization of learning and teaching in contact institutions involving the use of well design learning resources will result in improved quality and effectiveness
- The Ministry was also committed to encouraging the development of resource-based learning materials, as well as distance education programmes in niche fields by contact institutions as a means for improving quality and cost-effectiveness.

In his study of “group resource-based learning approach” Jenkins (2005:11) found the link with RBL to Higher Education Academy (HEA) professional values:

- A commitment to scholarship in teaching, both generally and within one’s own discipline
- Respect for individual learners and for their development and empowerment
- A commitment to the development of learning communities, including students, teachers and all those engaged in learning support; and
- A commitment to continued reflection and evaluation and consequent improvement of one’s own practice.

6.8 CONTRIBUTION TO ACADEMIC KNOWLEDGE

The value of research is to contribute to academic knowledge or create knowledge which would be used to refine and create innovative strategies in helping the communities. The contribution in this case is given in a point form below:

- It contributed to strengthening the use of qualitative research in higher education
- Qualitative research in this study shows that it can be used in the integration of theory and practice
- It revealed students’ potential and abilities through discussions
- Students and societies are capable of solving their own dilemmas and problems that exist in their respective communities

- Different paradigms and theoretical frameworks can be used to investigate educational research
- Modern technological devices exist in modern phases of teaching and learning
- Students and learning institutions are not given tools and resources to learn
- It raised the most critical issues which were ignored in the traditional teaching and learning, which are empowerment, emancipation, equality and freedom in applications of educational pedagogy
- It addressed the challenges faced when using RBL in higher education
- It raised and highlighted the threats to the effective use of RBL in creating sustainable learning ecologies in higher education
- It challenged the top-down approach in teaching and learning in which the teacher dominates the teaching and learning process
- It raised student-centred approach in learning.

The major essence of what has been discovered in this research project is outlined below;

The first point is that RBL is a vital mechanism in facilitating learning ecologies in higher education. Resources were found to be very critical in assisting students to execute their projects and engage practically with their fellow students and their ecologies of learning. It is of the fact that resources help students in practical manner and make students to own their learning ecologies. However, higher education should be where future leaders are made and critical skills developed. RBL has been shown in the study to be sustainable and encourages positive learning developments amongst the students in higher education.

The second point discovered by this study is that the usage of qualitative research is critical and on par with quantitative methods. Qualitative study unearth the humanity of students and their potential. Factors such as emancipation, freedom, equality in higher education are seen to be achievable and obtainable.

Lastly, what has been found in relation to the objectives of this current study is that, given the right suitable tools students can be able to execute their academic work and those tools can positively create sustainable learning ecologies in HE. The

suitable context including various structures of societies and patterns of networks can positively attest to sustainable learning ecologies, with the right support (scaffolding) from the lecturers, teachers and instructors. Yes, of course RBL has been shown to be an active agent of change in creating sustainable learning in HE. By using RBL the learning ecologies can be able to move from traditional teaching and learning to more modernized teaching, where new learning technologies and systems are used by both rural and urban population.

6.9 IMPLICATIONS FOR FURTHER RESEARCH

Resource-based learning, as shown from the secondary and primary sources gathered from the co-researchers, is an important method of teaching and learning in higher education. Considering one of the limitations of this study it contains a small number of co-researchers. I recommend research which is to be conducted on a larger scale and include different cultures and races, and a broader spectrum of the higher education sector.

One critical implication of this research study was the usage of qualitative methods in creation of academic knowledge. The value of CER, PAR and CDA was a significant factor and a highlight in educational research. I reiterate the replication of this study and the usage of the recommendations proposed in this research thesis.

The last valuable contribution and value of this research was taking the plight of the people into consideration. Topical issues around the world were stated, including equality, distribution of learning tools and resources, inequality, freedom, autonomy, collaboration, emancipation, democracy and constructivist approaches in higher education:

South Africa and its recent political transformation process, infused with hope for better future, is often presented as a utopian form of democracy – or an icon of hope-nationally and in the contemporary global landscape” (Lotz-Sisistka, 2009:134).

RBL can be a source of hope for the use of new pedagogies, and new methods of teaching and learning. It is the democratic right and effort of all people involved to create sustainable learning ecologies in higher education.

6.10 SUMMARY

Educational research is a source of new developments and brought about innovations and quality education for all. The recommendations in this study are not forced upon researchers and individuals, educators and administrative systems of higher education. The researcher of this current study recommends RBL as a democratic and more liberated pedagogical method, however, different people and educational systems prefer their own chosen pedagogies and political systems. Therefore, recommendations in this study are based on own judgment and preferences. The limitations of this study are based upon different ontological stance, epistemological beliefs and a notion that academic truth can be viewed from different perspectives. Not only CDA, CER or PAR can be the custodian of academic truth. Therefore, this study had to be criticized or is open to critique. The framework, theories and all approaches are subject to academic critique.

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APPENDIX A

Date:

INFORMED CONSENT FOR THE FACILITATORS

Dear Co-researcher

I would like to invite you to take part in this research project:

USING RESOURCE BASED LEARNING TO CREATE SUSTAINABLE LEARNING ECOLOGIES IN HIGHER EDUCATION.

This study is about “the usage of resource-based learning to create sustainable learning ecologies in higher education”.

We would like you to participate with us in this research because; to create knowledge regarding the usage of resource-based learning in higher education, 2. Promoting the critical emancipatory research framework in creating learning ecologies in higher education, 3. More students would learn from you as participants, and lastly improve learning by using RBL shall be considered.

The reason we are doing this study is to make a contribution towards the creation of sustainable learning ecologies in higher education through the use of resource-based learning. The possible risks to you in taking part in this study are the issues of privacy and confidentiality and we have taken the following steps to protect you from these risks. In this study the following vital factors would be guaranteed; (a) no physical harm will be encountered, (b). Privacy, anonymity and confidentiality would be secured, (c) no private or personal details will be asked.

I am sure you will benefit from this study as you shall be exposed to deep understanding of what really is the Resource-based Learning in higher education.

While I greatly appreciate your participation in this important study and the valuable contribution you can make, your participation is entirely voluntary and you are under no obligation to take part in this study. If you do choose to take part, and an issue arises which makes you uncomfortable, you may at any time stop your participation with no further repercussions.

If you experience any discomfort or unhappiness with the way the research is being conducted, please feel free to contact me directly to discuss it, and also note that you are free to contact my study supervisor (indicated above).

Should any difficult personal issues arise during the course of this research, I will endeavour to see that a qualified expert is contacted and able to assist you.

Yours sincerely

APPENDIX B

Date:

INFORMED CONSENT FOR THE CO-RESEARCHERS

Dear Co-researcher

I would like to invite you to take part in this research project:

USING RESOURCE BASED LEARNING TO CREATE SUSTAINABLE LEARNING ECOLOGIES IN HIGHER EDUCATION.

This study is about “the usage of resource-based learning to create sustainable learning ecologies in higher education”.

We would like you to participate with us in this research because; to create knowledge regarding the usage of resource-based learning in higher education, 2. Promoting the critical emancipatory research framework in creating learning ecologies in higher education, 3. More students would learn from you as participants, and lastly improve learning by using RBL shall be considered.

The reason we are doing this study is to make a contribution towards the creation of sustainable learning ecologies in higher education through the use of resource-based learning. The possible risks to you in taking part in this study are the issues of privacy and confidentiality and we have taken the following steps to protect you from these risks. In this study the following vital factors would be guaranteed; (a) no physical harm will be encountered, (b). Privacy, anonymity and confidentiality would be secured, (c) no private or personal details will be asked.

I am sure you will benefit from this study as you shall be exposed to deep understanding of what really is the Resource-based Learning in higher education. While I greatly appreciate your participation in this important study and the valuable contribution you can make, your participation is entirely voluntary and you are under no obligation to take part in this study. If you do choose to take part, and an issue arises which makes you uncomfortable, you may at any time stop your participation with no further repercussions.

If you experience any discomfort or unhappiness with the way the research is being conducted, please feel free to contact me directly to discuss it, and also note that you are free to contact my study supervisor (indicated above).

Should any difficult personal issues arise during the course of this research, I will endeavour to see that a qualified expert is contacted and able to assist you.

Yours sincerely

Date:

STUDY: USING RESOURCE-BASED LEARNING TO CREATE SUSTAINABLE
LEARNING ECOLOGIES

RESEARCHER:

Name and Surname: -----

Age:-----

First year SIL 108 students / PSDE are eligible to participate: -----

Contact number: 085 718 5433 / 5000

- I hereby give free and informed consent to participate in the above mentioned research study.
- I understand what the study is about, why I am participating and what the risks and benefits are.
- I give permission to make use of the data gathered from my participation, subject the researcher to give to the stipulations he / she has indicated in the above letter.

Signature: -----

Date: -----

APPENDIX D

ETHICAL CLEARANCE APPLICATION:

*USING RESOURCE-BASED LEARNING TO CREATE SUSTAINABLE
LEARNING ECOLOGIES IN HIGHER EDUCATION*

Dear M Malebo

With reference to your application for ethical clearance with the Faculty of Education, I am pleased to inform you on behalf of the Ethics Board of the faculty that you have been granted ethical clearance for your research.

Your ethical clearance number, to be used in all correspondence, is:

UFS-EDU-2014-052

This ethical clearance number is valid for research conducted for three years from issuance. Should you require more time to complete this research, please apply for an extension in writing?

We request that any changes that may take place during the course of your research project be submitted in writing to the ethics office to ensure we are kept up to date with your progress and any ethical implications that may arise.

Thank you for submitting this proposal for ethical clearance and we wish you every success with your research.

Yours sincerely,



Andrew Barclay
Faculty Ethics Officer

APPENDIX E

TRANSCRIBED DATA FROM THE CO-RESEARCHERS

The data included in here contains the group views and individual views from both the researcher and the co-researchers. This data include personal views and personal views of the co-researchers.

Importantly this data is not in the chronological order as it was used according to the objectives and flow of the literature concerning this study.

In some point the researcher was compelled to facilitate the discussion due to the fact that the co-researchers freeze, for ice breaker I facilitated the discussion by breaking questions.

TRANSCRIBED DATA USED TO ANALYSED DATA IN CHAPTER 4

Researcher: What are the challenges you are facing in PSIN 1415 in relevant to the tools you are using?

Sipho: "The challenge that I normally come across in the textbook which iss my first tool, the textbook is too big like is complex; you have to read from the first page to the last to get information. In my high schools the textbook was straight forward.

Sarah: I am participant two, my challenge is about the textbook, it has bombastic words, such as 'hypothesis', one is not familiar with such words.

Julia: Just to interrupt, it is really necessary to write things according to our understanding or just write according to the book, because the students are complaining after writing the test. Because they write things according to their understanding, so it is really necessary to write things according to their understanding, so it is really necessary to write according to the book that's my challenge though.

Facilitator 11: Talking Uhh I would like to go back to what other participants have been saying, looking at the textbook, most of those students don't even have those textbooks, but what they specifically indicates is, those with the textbooks, when they start reading the textbook, or when they are trying to understand and write what they are asked, now they write what they are asked, the lectures and facilitators started to marked them wrong, they need to go back and ask what I said is what the book is saying, sometimes you might write your understanding, and that is not what is in the book.

Andrew: mentioned that, "As for me I have only two tools my textbook, and my lecture, and the module guide". The first tool is my lecture 'she' cannot talk loud we cannot hear her. The only students who can hear her are the ones

in front-we are too many in the class. She (lecture) never pays attention to the students at the back.

John: When I'm doing gardening I use spade and other tools to help me do my gardening. I use spade, fork, machines to cut the grass and others.

Researcher: That is fine, but when you use tools and resources in an educational setting what do you use and how do you use them.

Peter: I use the computer room where you get there to use internet, and the Black Board, which is a resource learning material. I also use internet and the e-mail to communicate with other student from our class. We share information. I find it challenging (SIL 108) because we use different resources like Psycktrek and internet to get information.

Julia: The textbook had bombastic words and sometimes there are words you don't understand it isssznt is too small – if you come in late you have to sit on the steps.

Sipho: I would like to clarify to Julia and to Andrew, 'academically we had what we call a module terminology, so when you write in a certain module, you write in a certain module, you must be specific using its terminology, like for example, if you write in physical science you must use its terminology I think that is why the lecture end up marking us wrong we really had to adapt to its terminologies, given those that is our first time, but we must try to use those terminologies because it's the module terminology.

Sarah: Okay! Like in terms of the textbook is big, before you study with it you have to underline most important things, to make notes. I am using the slides sometimes nternet provide too much sometimes you are not sure if information is appropriate or not. You have to know how to search.

William: I would say the SIL 108 is a very challenging module, you might find that at some times is difficult to understand but as tend to get together we tend to understand like the information we are getting from others.

Sipho: First of all I would like to make the examples of the tools that I use first of all is the textbook, secondly I use the internet, I use the Psycktrek and the last one is my facilitator. I normally came across when I use the textbook is normally too big, you have to read from the first page up to the last, in my high school the textbook was straight forward. Second tool internet sometimes you do not get proper information. Sometimes is not easy or to trust the information, it happens that you read the information which is not reliable. My third tool is the Psycktrek that I use, the challenges is that the information is not all there, it is like the slides, it just guides you, it's just need more information, and sometimes there are more questions in Psycktrk and I sometimes relies on them too much. Which makes me forgets to go to my textbook. The last tool is my lecturer, sometimes the lecture takes about two

hours in a classroom which is too long. I end up being tired and losing the whole interest in the whole lesson.

Facilitator 11: I like to go back to what other participant have been saying. They are talking about the textbook, but most of the students don't have that textbook. But when they start reading the textbook maybe they got the problem with the terminology.

John: I would like to agree with co-researcher who just spoken that in most cases. I cannot gram all the words in the book. What is the meaning of the word understanding if we fail? I think we had the problem with our lecturers because they are marking us wrong.

Researchers: Do you think the context that PSIN 1514 is offered is good or what-if good how so and if is bad please elaborate.

William: It is not a good environment, it is bad we are too many in a class we need a bigger environment if it is not big we have at least mics (microphones). Lecturers should use mics and the other thing is that if you arrive five minutes late you have to sit on the stairs, when your are sitting on the stairs for three hours you lose concentration. Some of us have short concentration span, so it's really bad for us.

Sipho: I would say the context is not good at all, lecture room is too small you will find that you don't have a chair. When you arrive late you will sit on the stairs.

Sarah: Ya! It's good, because it is a study about behavior also include (ke hore) "meaning" it concerns with animals and behavior and things we do

Facilitator 10: What I have notice as having facilitated this module, it sometimes becomes difficult to control large number of student about 300. You would see that whilst you are teaching some students would be talking others sleeping up there (pointing at the top up chairs in a lecture hall). To control the class is like a management "juggling" on this site and this site. For RBL students are supposed to sit like this (pointing at the round table set up)

Facilitator 11: So there must be a time where the lecture or the facilitator should be more than one, at least they would help each other in managing the class, but it was also a challenge when now we could feel that student are becoming confused,

when this lecture voice is coming from that side and another voice coming from the other side, and then you can tell that they (students) are confused. I also agree with co-researcher 10 that if it is RBL the context must be suitable.

Sarah: You have to search for the information, sometimes you are not sure of you are searching for the right information, because the lecturer is not there.

Facilitator 10: Because of the setting there is no feedback-the delivery method is not good

Sam: One of the tools we are using is the internet, I feel in psychology we are not in that much using the internet, if you compared it with sociology, In sociology we are using, by using Multiple Choice Questions (MCQ's) which we are using, by using BB. But they are not there in psychology meaning, those MCQ's they act as the guidelines, what to study in preparation for the tests. But in psychology there no such, which we are been given, so if at least give us something because when we study in psychology, we don't have questions; remember this is our first time doing psychology, so they (lecturers) they don't give us full guidelines of how are we going to be assessed.

Sam: There should be tutorial classes. I think the solution is for that if they (lectures) can try to open the tutorial

William: I think we get less support, we not given the opportunity to have the tutorials sometimes we are scared of asking questions like, if we were asking questions to the tutors. Unfortunately we don't have tutors pretty less support from the lectures because we are given less tutorials, other, from that.

Peter: I think we do get support from the lecturers, but it is not such much, we get much we as student we are afraid of asking questions. It would be easier for us to go to the tutors; unfortunately we are not having tutors.

Sipho: I would say I get a very good support from the lectures, because I remember that they give us a clue of what to study. It is good for my academic career.

Peter: I think we get enough support from our lecturers because she give us slides for those of us who do not have textbooks, and for those who arrived late they can read for themselves

William: *In terms of preparing for the test we get support, in terms of guidance she (lecture) tells us what to study and not to study.*

Facilitator 11; mentioning that;

“RBL I think it can bring change, for example when you use the resources, you are actually trying, let’s say you are, you just learn a new term, as using resources you will try I in one way and your lecturer, think about it, relate it with other information then you discuss in a group with other people, that is experiential learning, then you are learning about it again then it will bring about change. Then you can able to apply it maybe during questioning where now you able to relate it to tuition. It will enable you to be able to be critical thinker. I don’t just absorb but you can apply it to other situations.

Sipho: *Is really “aaa” (pause) it (RBL) can bring about change, it makes you to live in a diverse world focusing on not one thing. It also makes you to understand many things.*

Facilitator 10 and Julia mentioned that;

“Most of the time we find that in resource learning student have to take responsibility which is very a challenge because they are still young, so it requires a lot of self-discipline and responsibility which sometime is difficult, if you don’t understand in a class it means (wena) you have to go out and find out that information”

It is very interesting because once you are exposed to that challenge, and you are able to deal with that challenge. Then I would say RBL can bring about change. Now you will realized that no no no I have to do that, now you will start working on the time management that of course is change. Then you will realize that I got the problem here then you will start changing.

Facilitator 11 highlight the fact that;

“I was thinking about the media lab, all modules being able to be access and the accessibility so with those who does not have computers with access to internet, I am just wandering so what happens with those”?

Julia: *The computer lab closes at 3am, and is the challenge to those students residing outside the university campus. If you stay off campus you can access internet by using your cell phone.*

Facilitator 11: *(probe by saying) and you must have airtime to do that, (All co-researchers laughs) it depends also what type of cellphone you got. What also if the WiFi doesn't pick it up (internet).*

Facilitator 10: *But we have WiFi here at campus I, this is available because when I come to campus it connects to WiFi automatically.*

Facilitator 11: *I know of one student who had a phone that connects easily on WiFi, but if that student put it on, other students can be able to pick it up from his cellphone, so that kind of thing happens. How can we know? This can be a solution. If you know your friend who had that type of a phone others can be able to pick it up from his cellphone.*

Facilitator 10: *Okay!!! "AMM" what I've noticed having facilitated the module before it was a challenge that I notice, with RBL it is important that the class setting is in the way that students are able to interact, especially during the activities, especially you as the facilitator you need to be a resource as well unlike being a lecturer standing in front of the 300 students. For me is like RBL should be offered in the way that are sitting, in group work and discuss things and clarify things with the students. So you find that students who are sitting way up there, you can see others are charting others are sleeping, so it becomes like a management so you are juggling here and there. Maybe the classes need to be smaller, or maybe they should device another way if it can be a true RBL environment. But I doubt that all the students become engage in class. So that is the challenge I have.*

Sam mentioned; *that working with my group, I felt positive about our work ethic. My group members and I were quite eager to take part in the making of the collage. I felt good with the communication we had. Although when one member didn't contribute anything, I felt a bit thrown off or negative because it had seemed as if she was dedicated to the task at hand. Other than that, working with group felt good.*

Andrew: *mentioned that during the collage was not a difficult task at all, but what I found being difficult was the venue and time which we were supposed to agree*

upon. Only few people in my group participated, but overall, I found it very mind calming and a relaxing thing to do after a long day at school.

Sarah interrupted by saying that “I think working as a group collecting photos was very helpful to me. Because now I know more about positive psychology, and that positive psychology is also about being happy in something that you do not like to do, is also about being supportive, loving and caring for each other. Working with a group was good even though some of us did not participate, but it really helped for or to some of us to understand.

Peter: It was quite awesome to do the task that we have being given as a group. Working as a group makes the task to be easier because we were all committed to do our best. It was quite interesting because we were engaging with one another to explore the concept “Psychofortology”. I find it motivating the reason being that the happy faces made an important impact.

Sarah: For I, working in a group was very enjoyable manageable. We divided the task amongst ourselves and everyone participated. It was fun and great. It was definitely more of an advantage working in a group

Peter: I want to be fair to you, what I feel is if I am with the same students doing the same course I feel comfortable and relaxed, but when I am in class I do not want to even ask or answer the questions because the lecture can ask you follow up question and if I cannot answer it will be embarrassing for me.

Andrew: I totally agree with participant 6, some students might laugh at you. I think the better way is to have tutorials like in sociology and other modules.

Sam: I agree with all the participants if we could have tutorials I think we can actively partake in activities and programmes

Facilitator 11 “I would like to go back to what other participant have been saying about the textbook, firstly they (students) talk about the textbook but most of the students don’t have those textbook.

Sipho: “I would like to clarify to Julia, and Andrew I academically we have what is called module terminologies. We must try to adapt to module terminology”.

Facilitator 11, (adding) you don't have to write the exact words like in the textbook, if you write in your own words you must not write words which are not there.

TRANSCRIBED DATA FOUND IN THE RECORDING DEVICE

Researcher: Good morning colleagues, as you know I am the lecturer at the UFS Qwa Qwa Campus. In the previous month we did meet and discuss the aims and purpose of this research. I believe all of you had signed the consent forms, and I believe we all know why we are here.

Researcher: So it means my relationship with you , it won't be personal or private, don't worry there would be no private matter or private matters but the idea is that as you have seen and as you have read the consent letter you have an idea, so this is our first day officially. Because one of the concerns is the question of confidentiality, due to the fact, I think I will prefer to call you participant A, B C and so on. Participant H and I have not yet arrived. So everything that we are going to say here is confidential.

We are going to talk about SIL 108 as an RBL module, and SIL 108 is the introductory course as you know.

Do you know what SIL IS?

Co-researcher: Yes (all of them agreeing)

Let us introduce our self and introduce what other courses you are doing so that I can have a clear idea of other courses.

Co-researcher: I am doing 'Sos', Sociology, English, which is ENG, and VBL and this is my first year.

Co-researcher: Okay, I am doing Sociology and English, which is general English and VBL.

Co-researcher: This is my first year; I am doing VBL and Southern Sotho, which is Sotho except psychology.

Co-researcher: I am doing English, Zulu that is my major course.

Researcher: As you know that we have different sessions which we are going to meet on those scheduled days, is it okay with you? **Co-researchers:** YES (all of them agree). Those are the days which we are going to meet and discuss all about SIL 108, RBL and the activities that we might be doing. Then the other thing to ask, do you have an idea of what resource is. For example if you are doing gardening what are you using

Co-researcher: When I'm doing gardening I use spade and other tools to help me do my gardening, I use spade fork, machines to cut the grass and others.

Researcher: That if fine, but when you use tools and resources in an educational setting what do you use and how you do use them.

Co-researcher: As for me I have only two tools which is my lecturer and my module guide obviously, the first tool which is my lecturers, the thing is that at times she is not audible enough, we are too many in the class, the problem is that the lecturer sometimes, we do not understand, she only focuses on the people who are sitted in front. The other thing is that the textbook, the textbook is too big, it is very big, but if you use module guide and psycktrek it is easy to understand.

Co-researcher: Honestly speaking I don't have challenges but the only problem I have is the CD is bit complex, like an example one would had to go and search a module or a course and basically I cannot find the information that I have.

Co-researcher: Your media lab, textbooks and Blackboard. I know how to use the e-mail and the internet

Co-researcher: I use the computer room where you get there to use internet, and the Blackboard, which is also a resource learning material. I also use internet and the e-mail to communicate with other student from our class. We share information. I find it challenging (SIL 108) because we use different resources like Psycktrek and internet to get information.

Co-researcher: It is not challenging as such you had to familiarized yourself with the module and prepare before going to class.

In the middle of the discussion one co-researcher arrived late;

Researcher: Participant H: welcome, don't worry by arriving late – we are using the tape recorder – do you mind

Co-researcher: No, I don't mind

Co-researcher: For the first semester we were not discussing in the class, but we were watching the videos. We watch the part on Erickson theory and the nervous system.

Co-researcher: For me psycktrek was helpful, I did not do science at school. While I was watching it gives me the information which the lecture did not give, so for me it was helpful. Sometimes the lecture gives us a short description of the whole; therefore we get assistance from the videos and internet.

Researcher: What are the challenges you are experiencing in SIL 108, in relevant to the tools that you are facing

Co-researcher: That I 'm facing okay; in terms of the textbook, its big and like before you start with it you have to underline the important things "ya" it's big, and

to make notes. I am using slides to help me as the addition to the information given by the lecture and the textbooks. I find them useful; I am also using the textbooks.

Co-researcher: The challenges that I am facing is that you have to search for the information; sometimes you are not sure if you are searching for the right information because the lecture is not there.

Researcher: Let us talk about the context that SIL 108 is offered

Co-researcher: “Ya”the context is good, because it’s the study about behaviour (kehore) it concerns with animals, people thing that we do. It’s the study of behaviour, cognitive also physiological, it is about humans it can improve us as humans

Co-researcher: It is not a good environment, it is bad we are too many in a class, we need a bigger environment if it is not big can we have at least mics (microphones). Lecturers should use mikes and the other thing is that if you arrive five minutes late you have to sit on the stairs, when you are sitting on the stairs, when you are sitting on the stairs for three hours you lose concentration. Some of us have short concentration span, so it’s really bad for us.

Co-researcher: With regard to the context I think it is easier if you read the slides, I can say is not easy to communicate with the lectures, I can say because the classes are huge.

Co-researcher: The way we are taught it can be sustainable, like that I say that I use resources it is the learning that is durable, because we use internet and group discussions. We also use the e-mails to communicate with our friends and lectures.

Co-researcher: I think it be useful as a sustainable tool, because if you can’t be free at the first instance how are you going to the second session.

Co-researcher: I can tell you about the textbook, it has bombastic words that you cannot understand and the book is too big. Sometimes Blackboard is not working and staffs, the venue is too small some students have to sit on the stairs, if you come late.

Co-researcher: The context is good because it teaches us to understand ourselves. It is the good context though the lecture needs to clarify the chapter and SIL 108 is about the foundation, if you want to be teacher for example you had to be confident and motivated.

Researcher: What can you say in relevant to the challenges

Co-researcher: First of all I would like to make the examples of the tools that I use. First of all is the textbooks, secondly I use the internet, I use the psycktrek and the last one is my facilitator. I normally come across when I use the textbook, is normally too big, you have to read from the first page up to the last, in my high school the textbook was straight forward, second tool internet, sometimes you get a proper

information, sometimes is not easy or to trust the information, it happens that you read the information which is not reliable. My third tool is the Psychtrek that I us, the challenges is that the information is not all there, it is like the slides, it just guides you it's just need more information, and sometimes there are more questions in psychtrek, and I sometimes relies on them too much. Which makes me forgets to go to my textbook. The last tool is my lecturer, sometime the lecturer is takes about two hours in a classroom which is too long. I end up tired and losing the whole interest in the whole lesson.

Co-researcher: I would like to say SIL 108 is a very challenging module, you might find that at some time is difficult to understand but as we get together we tend to understand like the information we are getting from others, we exchange

Researcher: What about the context

Co-researcher: I would say the context is not good at all because the class we are using is too small and we are huge. So you find that you don't get a chair you have to sit on the stairs

Co-researcher: I would say the context is good in a way that we are given an opportunity to discuss and make group. I can say it is very good.

Researcher: Let us discuss the support we get

Co-researcher: I would say I get a very good support from the lectures, because I remember that they give us a clue of what to study. It is good for my academic career

Co-researcher: I think we do get support from the lecturers, but it is not such much. We get pretty less support from the lecturers because we are given less tutorials, other from that we as students we are afraid of asking questions. It would be easier for us to go to the tutors; unfortunately we are not having tutors.

Co-researcher: Wee; based on that we do. About the type of support, is that we can go to them for example, I have the marking on my script, I went to the lecture and he helped me with the marks.

Co-researcher: It terms of preparing for the tests and exams she guides us on what to study and what not to study. Sometime I lose interest in attending lectures because she (lecturer) is not audible enough. The support is good, but the most important part is getting pass marks and going to the next level.

Co-researcher: Yes it (RBL) can be used as an agent of change because Ummm!!! Lot of students we tend to understand if we get the information from other students, if we have different ideas we tend to understand. Yes it can be used to sustain learning in higher education, because we need the group works, we need to work

as a team, individually you tend to have less information. You have to work with people to sit down with them and understand how they do things

Co-researcher: the only good thing about the context is that if you are many in classes the breath warms the class

Co-researcher: According to me, I can say the context is good because we have a clear understanding of things, and how are they sorted

Co-researcher: RBL methods like SIL 108, if we use them it can be good for the students, for example if you allows students to watch a certain movie, there should be questions regarding that film or the movie so that they can be active participants at higher education.

Co-researcher: It (SIL 108 / RBL) can be used on how we learn it gives you much energy to learn more. Learning things which are even outside you, like not being stereotype. Yes it can be used for a long time (sustainable) because it us most, when you study this module it makes you to see life in different way.

Researcher: Let us discuss your current experiences in this module and others

Co-researcher: I am being introduced to psychology, to what psychology is. I am currently also being tested on the information that I have ben lectured on and so on.

Co-researcher: What I have found in SIL 108 is that we have to discuss through videos, which has helped me to watch video and answer certain questions. SIL 108 gave the introduction to psychology and I have experience many things that was always asking myself, for example when a baby cry when her mother leaves her and found that it's because of attachment

Co-researcher: My experience in SIL 108 are not that many as most of the units we covered were biological, so I studied biology in high school so the information I have or had are very helpful as to studying SIL 108

Co-researcher: In SIL 108, I'm currently experiencing a new and positive approach towards life. Positive psychology helps one to learn life balancing, positively, emotionally and healthy state of mind.

Researcher: Tell us about the challenges you faced

Co-researcher: I am participant 2, my challenge is about the textbooks, and it is having bombastic words, such as 'hypothesis' one is not familiar with such words.

Co-researcher: just to interrupt is it really necessary to write things according to our understanding or just according to the book, because the students are complaining after they write things according to their understanding, so it is really necessary to write everything according to the book, that's my challenge though.

Co-researcher: I would like to agree with the co-researcher who just spoken that in most cases, I cannot gram all the words in the book. What is the meaning of the word understanding if we fail? I think we had the problem with our lecturers because they are marking us wrong.

Co-researcher: I would like to clarify to co-researcher 2 and co-researcher 3. Academically we had what we call a module terminology, so when you write in a certain module, you must be specific using its own terminology, like for example, if you write in physical sciences you must use its terminology. I think that is why the lecturers end up marking us wrong. We really had to adapt to its terminologies, given those that it is our first time but we must try to use those terminologies because it's the module terminology.

Co-researcher: I understand what you are saying co-researcher 5 psychology is part of science which means we must use terms of science, so what you are saying is we should use "how could I say this", according to science, because psychology is written from science.

Co-researcher: Yes, to respond to you co-researcher 12, there are terminologies, specific terminologies, like for example in sociology, we have some terms like "bourgeois" those are the terms like the "bureaucracy" those are the terms which to use when you are tackling certain questions in that particular module.

Researcher: Can I interrupt what are the things you find for difficult in this module or more challenging

Facilitator 11: Participant 11 talking Uhh!!! I would like to go back to what other participant have been saying, looking at the textbook, firstly they talked about the textbook, most of those students don't even have those textbooks, but what they specifically indicate is, those with the textbook, when they start reading the textbook, or when they are trying to understand and write what they are asked, now they write what they understand and the lecturers or facilitators started to marked them wrong, they need to go back and ask what I said is what the book is saying sometimes you might write your understanding, and that is not what is in the book. For example, if they say "classical conditioning" if in your understanding you understands it wrongly, and you don't explain as it is related in your textbook. You don't have to write every word as per textbook, but you don't have to change the meaning which is in the book, to say this is what I understand and this is what the book is saying. It is very important to indicate what you are saying. But don't go away from the meaning.

Co-researcher: Simply meaning our understanding is not clear from the textbook

Facilitator 11: It should be clear in your own words, at what was indicated in the textbook not something which is opposite. Because for example, it is very clear from the students that you might think you say "classical conditioning": whilst you are saying: "operant conditioning".

Facilitator 10: I think I understood differently from what co-researcher 2 was saying. She was saying adjusting to the words, because they are so different from what she used to. If for instance you come from another background, for instance economics, the terminologies used in SIL 108 is different. So science and economics is not the same thing, so adjusting. The terminology is a challenge; a new language of instruction is a challenge. So you can use your own English but your English should be like exactly what the terms mean.

Facilitator 11: I am sure if that part is clear from the student as well. Let's go back to the use of terminologies, what I understand is that you must use the terminologies in that field, It has the terminologies like "hypothesis", or classical conditioning it should not be changed. What we can is for example you ask for clarification or you google it, you should ask your friends. But changing the concepts all together you will be coming the theorist yourself (All co-researchers laugh)

Facilitator 10: I would think in other developmental modules they have the textbooks which have the glossary of words; I don't know how the students do the glossary of words. If you encounter a new word you write the meaning down, that is the way of improving your language, and your language, and your vocabulary, but I don't know if the students do it. That's the only way you can actually learn, because like participant 11 said, it's the language of a certain field, so if you are hoping to be a psychologist in the future you must, at least know the basic concepts of psychology.

Researcher: What about the context in which this module is offered

Facilitator 11: Sorry I have to go back to the first question, I feel like we only talked about the textbook, there are a lot of tools. I feel we should talk about other tools and resources we are using for this module before we go on. What other tools are we using.

Co-researcher: One of the tools we are using is the internet; I feel in psychology we are not in that much using the internet. If you compared it with sociology we are using MCQ's which we are using, by using the Blackboard. But they are not there in psychology meaning, those MCQ'S they act as the guidelines, what to study in preparation for the test. But in psychology there are no such, which we are been given, so if at least give us something because when we study in psychology, we don't have questions, remember this is our first time doing psychology, so they don't give us full guidelines of how we are going to be assessed.

Researcher: following up question "who do you mean when you say they".

Co-researcher: I mean the lecturers

Co-researcher: I would like to disagree with participant 5, in our textbooks there are CD's and questions which we must use to prepare ourselves.

Facilitator 11: What about the module itself does it have some questions, it would also help co-researchers 5 to also do it on the Blackboard.

Facilitator 10: I was also thinking the same thing as first years you are orientated to Blackboard so all the modules should be there so that you get used to it, so you get using Blackboard, so that you know that this module have that and that, that module have that.

Co-researcher: And also in addition to that it also encourages you to do things like in Blackboard, there are marks (assessment) which encourages student to study hard in preparation for taking the test in the Blackboard. A different from tackling the modules in your own, because you not being assessed if you are tired you live it there. But then in the Blackboard you know you are doing it for marks so it motivates you.

Facilitator 11: I was thinking about the media lab, all modules being able to be access and accessibility so with those who do not have computers with access to internet. I am just wandering so what happens with those.

Co-researcher: The computer lab closes at 3am, and is the challenge to those students residing outside the university campus. If you stay off campus you can access internet by using your cell phones.

Facilitator 11: And you must have airtime to do that (all co-researchers laugh) it depends also what type of cell phone you got. What also if WiFi doesn't pick it (internet).

Facilitator 10: But don't we have WiFi here at campus I think this is available, because I know when I came on the campus it connects to WiFi automatically

Facilitator 11: I know of one student who had a phone that connects easily on WiFi, but if that student put it on, other students can be able to pick it up from his cell phone, so that kind of thing happens. How can we know, this can be a solution. If you know your friend who had that type of phone others can be able to pick it up from his cell phone.

Facilitator 10: Okay 'Ammm' what I've noticed having facilitated the module before is, it was a challenge that I notice, with RBL it is important that the class setting is in the way that students are able to interact, especially during the activities, especially you as the facilitator you need to be a resource as well, unlike being a lecturer standing in front of the 300 students, for me is like RBL should be offered in the way that we are sitting (pointing to the current set up during the discussions), in a group work and discuss things and you also have to move around and clarify things with the students. So you find that students who are sitting way up there, you can see others are chatting others are sleeping, so you are juggling here and there. Maybe the classes need to be smaller, or maybe they should device another way if

it can be a true RBL environment. But I doubt that all the students become engaged in class, so that's the challenge that I have.

Facilitator 11: So there must be a time where lecture or the facilitator should be more than one, at least they would help each other in managing the class, but it was also a challenge when now we could feel that student are becoming confused, when this lecture voice is coming from the other side, and then you can tell that they (students) are confused. I also agree with co-researcher 10 that if it RBL the context must be suitable.

Co-researcher: Coming to you co-researchers 10 and 11, we can have group discussions just like we have in the class, the lecturer poses the question and at the end of the class he tells us what is the right answer. So I think we can have a group discussion on BB

Facilitator 10: Do you find that, I don't know, do you find that the class of 300 students can they discuss on BB at the sometimes, because you will find students who are dedicated and want to learn, they want to achieve certain goals. But what about the students who do not have goals they don't really care about going on BB. But what I am saying is that in the classroom itself our classes and our lecturers' halls must be in a way that encourages participation and boost that resource-based learning.

Co-researcher: Also the conformability we are not comfortable in the classroom, like for example if you arrive late, you won't find a sit or chair in the classroom, you had to sit on the stairs, for the whole three hours meaning the most of the students who arrived late, they won't be comfortable and therefore they won't concentrate. I feel that if the class can be divided as co-researcher 10 have said, it least there must be two slots.

Co-researcher: Just to add on the other co-researchers I have the same problem that my modules times do clash, so I think we should use different time slots, for others.

Facilitator 11: Coming toward what was already indicated by co-researcher 10 the class is too big, we should have smaller classes, or where students can be able to sit and discuss. Sometimes in the module there is a (pause) let me say "do in a group of ten", students cannot group themselves because of the set up in the lecture halls. The desks and chairs does not allow group format sitting, they students would end up discussing with the person who is sitting next to him. So I would go back to what was indicated earlier by co-researcher 10, the lecture halls are not suitable.

Facilitator 10: I would also like to add on that especially the delivery method, with RBL, as the facilitator you don't lecturer, other co-researchers clarify it. Other facilitators end up lecturing, instead of facilitating, they do more of the talking than the students do- and because of the setting we just agreed on it, also made it

impossible for the student to give feedback, because (a kere) when they give feedback there is no interaction, because of that.

Facilitator 11: Going back to what co-researcher 2 has alluded, student can't even ask question, what that? What you are talking about is too new for me – there is no interaction

Co-researcher: Solution to that I think there must be tutorial classes, to be at least better because the tutorials are more of a discussions and we are being taught the ways of how to tackle the long questions, in the lecture halls we don't get enough time for discussions, I think solution for that if the lectures can try to open the tutorials at least.

Co-researcher: Solution to that I think there must be tutorial classes, to be at least better because the tutorials are more of a discussions and we are being taught the ways of how to tackle the long questions, in the lecture halls we don't get enough time for discussions, and I think solution for that if the lectures can try to open the tutorials at least.

Facilitator 11: The context when coming to the arrival, (Hey!!) students are coming to class very late, they come bit by bit, others, whilst we are lecturing others would be moving up and down, others moving out so that context is not good enough and to both student and other students, because you feel as a facilitator that a maybe for that period you will facilitate for that first period, after the first period, others (“whilstling”) would move in. As a facilitator you feel that for that, for the first period you facilitated to someone else – and for the second period you facilitated to a different person – but when you set the test you set in for both.

Co-researcher: What facilitator 11 have just said it takes us back to the suggestion which was about the slots meaning slots for sociology, because some are clashing so they had to live in the middle of the class that affect other students, then if maybe the slots can be sorted maybe things will be fine.

Researcher: Lets here from you facilitator 10

Facilitator 10: There is a lot of clashes also strange that you find in first year modules, because I believe there should be clashes between first and third year modules. When you are on the third year, I don't expect clashes. So clashes are really a problem to the university management of time table makers.

Researcher: If you get a support what type of support do you get from the lecturers and from your fellow students?

Co-researcher: I think we get enough support from our lectures because she give us slides for those of us who do not have textbooks, and for those who arrived late they can read for themselves.

Co-researcher: I don't agree with co-researcher 2, I think we do not get enough support, because after receiving the test papers, most lecturers they don't go back to the test, even though they (lecturers) realized that we are failing, but they don't

give us time for revision and revision is part of support that can be offered by lectures to the students. Take into consideration things, after every test we go back and we revise.

Co-researcher: I think we do get enough support, because preparing for the exam we do get scope, and we had the textbook and she (lecturer) guides us on what to study and not to study – and what more do you want?

Co-researchers: (speechless)

Facilitator 11: There should be more that you want; you want to pass, remember that technology is frequently used and previously if you can remember students were given memorandum. But currently the corrections can be uploaded on BB. I also agree with the co-researcher 5, that after you have marked if the same thing come to the next test, the revisiting the test on BB, but what I have notice the students don't even come to ask, knocking on our doors.

Co-researcher: What I am talking about is the revision not knocking to ask questions on lectures doors.

Co-researcher: I think the group work should do better, simply means that after the test, we should get the memorandum and the group, and then we discuss those questions that we got wrong; unlike we should go after the lecturer, unlike doing things individually

Facilitator 11: Tutorials are organized group work. I like the way where students ask questions in class

Facilitator 10: I like the way both co-researchers put it, resources need to be used, maximize the usage of resources, if we have to go to the lectures, if we have to go 50 000000 times lets go, if we have to do group work let's do it, if we had to use BB or tutorials let's use them and let the university organize them.

Researcher: Do you see RBL as an agent of change in higher education, can this module (SIL 108) bring about change in your learning process.

Facilitator 11: RBL I think it can bring change, for example when you use the resources, you are actually trying, let's say you are, or you're just learning a new term, as using resources you will try it in one way and using your lecturer, think about it, relate it with other information then you discuss in a group with other people, that is experiential learning, then you are learning about it again then it will bring about change. Then you can be able to apply it maybe during questioning where now you are able to relate it to tutorials. It will enable you to be a critical thinker. I don't just absorb but you can apply it to other situations.

Co-researcher: Is it really a, it can bring about change; it makes you to live in a diverse world focusing on not one thin. It also makes you to understand many things

Facilitator 11: Most of the times we find that in RBL students have to take responsibility which is very a challenge because they are still young people, so it requires a lot of self-discipline and responsibility which sometimes is very difficult. If you do not understand in class in means (wena) you have to go out and find out that information.

Co-researcher 2: It is very interesting because once you are exposed to that challenge, and you are able to deal with that challenge. Then I would say RBL can bring about change. Now you will realize that no I have to do that, now you will start working on the time management that of course is change. Then you will realize that I got the problem here then you will start changing.

Co-researcher 1: This module can create durable, impact learning because this, module is where by you deal with human behaviour, to say, so you go to a point where you understand how people behave in certain situations, so it can be used for future to understand humans and the society as well.

Co-researcher: I agree with co-researcher 1, because it can help you to understand yourselves as well, you even learn how to share resources with other people and respect the resources that you are using.

APPENDIX G

