A framework for using Experiential Learning Theory to Develop Game-Based Learning

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DECLARATION

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ABSTRACT

This study explores experiential learning and game-based learning to determine how experiential learning can be used to support game-based learning design in workplace settings. The study used a non-empirical concept analysis methodology for exploring the potential conceptual links between experiential learning and game-based learning. During the concept analysis, which included a detailed literature review, the links, interrelatedness and connections between the concepts emerged that showed experiential learning can be used as a conceptual foundation for the development of game-based learning. Finally, the integration of experiential learning and game-based learning can assist organisations to enhance learning by considering the implications of the study in future game-based learning development.

Key words: experiential learning, game-based learning, concept analysis

OPSOMMING

Hierdie studie ondersoek evaringsleer en spelgebaseerde leer om te bepaal hoe ervaringsleer gebruik kan word om spelgebaseerde leerontwerp in die werkplek te ondersteun. Konsepontleding was gebruik as metodologie vir beide konsepte, ervaringsleer en spelgebaseerde leer, in hierdie nie-empiriese studie. Tydends die konsep-ontleding proses, wat geskoei is op ‘n gedetaileerde literatuurstudie, het die interverwantskappe en konneksies tussen die konsepte na vore gekom en dit dui daarop dat ervaringsleer as grondslag vir die ontwikkeling en leerontwerp van spelgebaseerde leer gebruik kan word. Die integrasie van ervaringsleer en spelgebaseerde leer kan organisasies moontlik help om leer te verbeter deur die toepassing van die bevindings in die gevolgtrekking van die studie.

Sleutelwoorde: ervaringsleer, spelgebaseerde leer, konsepontleding

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1.1 Introduction

The landscape of human interaction and connectedness is changing with the introduction of social media, social networking and gaming. The digital revolution of the past two decades introduced major changes to all areas of human activity. This revolution changed the way we work, the way we learn, the way we communicate, and the way we socialise. The digital revolution introduced a world in which we can access any information by the touch of a button. Information and Communication Technologies (ICT) are facilitating communication and enabling new forms of work and learning which are not constrained by time and space as it was in the past. Technology and innovation further create new competitive advantages and increase productivity (Romero 2015:115). According to Li (2017:189), technological advancements have proved to be a key factor in achieving greater effectiveness and efficiencies for individuals and organisations. The digital revolution is further challenging Human Resources Development (HRD) professionals to investigate the use of technology in learning in order to improve employee performance and organisational development to determine the impact of technology on employees' learning needs (Li & Herd 2017:185).

For organisations to stay competitive, their human capital needs to be equipped with the knowledge and skills to perform optimally in a changing world of work (Romero 2015:115). Organisations further need to adapt to market changes to stay competitive. Staff competence and skills are key factors required for organisations adapting to these changes. With the emphasis on online learning and technology rapidly expanding, organisations are moving away from traditional training methods and instruments, such as classroom training, to the adoption of technology-based learning spaces which are able to create opportunities for new forms of workplace learning, such as online learning, virtual classrooms, and game-based learning. Romero (2015:115) confirms that organisations are changing their learning offering to employees, "[l]earning resources, learning activities and courses are offered in

blended online modalities making formal and informal learning more accessible and thus digital literacy is becoming a key competency of the 21st century". Qian and Clark (2016:51) share this view in stating that the development of 21st century skills are essential to adapt to the new digital economy within which we find ourselves.

These changes create challenges for both the employee and the organisation. Firstly, employees require a specific skill set to adapt to the knowledge and technological and digital advancements in the 21st century workplace. Simultaneously, organisations need to adapt a 21st century approach to learning, which necessitates a learner-centred approach to create meaningful lifelong learning experiences with increased learner engagement through active learning strategies (Romero, 2015:116). Voogt, Erstad, Dede and Mishra (2013:403) emphasize that organisations should analyse their current learning approaches to adapt to learning strategies appropriate for acquiring 21st century competencies. Organisations should further integrate the role of technology in the learning process. A change is therefore required – not only in what is learnt, but also how the learning is happening.

How adults learn has been a central point of focus for scholars and learning practitioners in the field of adult education but to date, no single model or theory explaining the intricacies and context where adult learning takes place exists (Merriam, 2001:3). There are, however, a number of theories, models, principles and explanations that form the knowledge repository for adult education practitioners. Most notably, Knowles' (1980:43) work on andragogy highlights adults' need to know why they are learning, their use of prior experience when they are learning, the importance of adults' self-concept in wanting to be able to make their own learning-related decisions, as well as the importance of readiness to learn, and immediate applicability thereof. Finally, adults seem to learn best when they are intrinsically motivated to do so. These findings relating to adult learning form the basis of andragogy as envisioned by Knowles (1980), which has direct implications for learning design.

Designing an adult learning intervention according to andragogical principles demands that adults know why they are learning something, that they (actively) learn by doing, that learning is based on real-life problems that they have to solve, and

that they are able to immediately apply what they have learnt (Knowles, 1980). According to Yi (2005:34) organisational instructional design methods are aimed at improving adult learners' knowledge and skills by focusing on the unique attributes of adult learners in the application of the principles of adult learning in the learning design. These adult learning principles therefore form the basis for the transfer of learning and the transfer of learning in a workplace setting is therefore aimed at direct work application. Such learning applicability points to the importance of experiential learning (which is learning by doing or acting out that which is relevant to the real life setting) and is crucial for adult learners as they gain a sense of achievement through doing. Houle (1996:30) makes an early link between andragogy and experiential learning in stating that: "andragogy has alerted educators to the fact that they should involve learners in as many aspects of their education as possible and in the creation of a climate in which they can most fruitfully learn".

This study uses concept analysis as proposed by Walker and Avant (2005:160) as methodology (which is later explained in more detail in section 1.4.2 of this chapter). The focus of the study, using concept analysis, is to conceptually explore experiential learning and game-based learning, the relation between these concepts, and their contribution and importance in the design of 21st century learning.

As an introduction, an understanding of the two key concepts is based on the following definitions:

- *Experiential learning,* as defined by Kolb (1984:41), "is the process whereby knowledge is created through the transformation of experience. Knowledge results from the combination of grasping and transforming experience."
- *Game-based learning* can be described as "a competitive activity in which students are set educational goals intended to promote knowledge acquisition. The games may either be designed to promote learning or the development of cognitive skills or else take the form of simulations allowing learners to practice their skills in a virtual environment" (Erhel & Jamet, 2013:156).

Experiential learning will be discussed in detail in chapter 2 of the thesis, and chapter 3 will focus on the exploration of game-based learning.

The next section sets out to explain the necessity for a study focusing on the concepts introduced in the section above.

1.2 Background to the study

Due to technological developments, changes in the world of work, and competencies required to function in the 21st century workplace, organisations encounter changes and challenges with specific reference to workplace learning. People require 21st century competencies in order to be successful in the knowledge and digital economy. These competencies refer to a number of skills, including productivity, critical thinking, creativity, innovation, collaboration, communication, media and technology skills (Qian & Clark, 2016:51). As a 21st century competency, productivity implies the ability to realise ideas and to plan and manage projects to achieve goals. Productivity, from a learning perspective, is associated with Papert and Harel's notion of constructionism (as cited in Voogt *et al.,* 2013), which involves learning-by-making, thus experiencing what is learned first-hand. The link between productivity and constructionism is explained by Voogt *et al.* (2013:404) in stating that knowledge is constructed when learners are actively engaged in the learning. This is directly linked to experiential learning as active learner engagement is a characteristic of experiential learning (as discussed in section 1.3 of this chapter). To achieve learner engagement, competencies such as creativity, innovation and risk-taking are required in learning interventions. In addition, interpersonal competencies such as communication, collaboration and responsible behaviour are essential in the 21st century workplace. Even though these competencies are not new or unique to the 21st century, they do take on new dimensions in the 21st century through online learning and virtual interaction (Voogt *et al.,* 2013:404).

Although many organisations have shifted their learning strategies and offerings to include blended modalities and online learning for formal and informal learning (Romero, 2015:115), these strategies can still provide ineffective learning opportunities (Pannese & Carlesi, 2007:438). Pure e-learning may lack creating learner enthusiasm and fostering group dynamics. Learners do not only want to learn

theory, but want to be actively involved in the learning process. Thus 21st century learners require a learner-centred approach that provides them with meaningful lifelong learning experiences through active learning strategies (Romero, 2015:116). These findings suggest a new form of learning is required that is closely related to the real working environment, utilising technology and focused on learner engagement and involvement to bridge the gap and steer learning towards the requirements of the 21st century workplace.

Two key concepts emerge as building blocks for a new learning approach: *active learning* and *learner engagement*. Learner engagement is defined by Coates (2005:26) as, "… the extent to which students are actively involved in a variety of educational activities that are likely to lead to high quality learning". Coates further points out that the active role of the learner is required to achieve learner engagement. For the organisation, learning becomes a key enabler to enhance performance by maximising learning effectiveness and equipping employees with the required skills they can apply in the workplace. However, learners need to be engaged in the learning to develop the necessary skills.

Li and Herd (2017:186) confirm that learning remains a critical enabler for both the employee and organisation to achieve organisational performance goals, which necessitates a consideration of new learning approaches to meet current individual and organisational needs. Li (2016:190) further states that learning and decision-making happen in real time and it is therefore necessary to move learning from linearity to simultaneity, which requires immediate integration of ideas and information. Online learning provides this flexibility and efficiency. To guide learning in organisations, a new learning approach is emerging in the form of game-based learning. Game-based learning can play a role in changing learning from being passive and theory based to learning experiences that could transform organisational performance.

In sections 1.1 and 1.2 of this chapter the rationale for experiential learning, and the need for a game-based approach within an organisational setting where aspects such as productivity are paramount were discussed. This thesis therefore sets out to explore experiential learning and game-based learning in workplace settings. A more

detailed explanation of experiential learning and the emergence of game-based learning is discussed in the next section.

1.3 Statement of the problem

Romero (2015:116) and Brozik and Zapalska (2000:407) point out that game-based learning is experiencing an increasing acceptance in the lifelong learning context as an active learning strategy or approach which could engage learners while providing a positive learning experience. Brozik and Zapalska (2000:407) position game-based learning as a valid educational (learning) experience. This notion is reinforced by earlier authors such as Pedersen and Hofstede (1999:416) when stating that interactive learning methods, which include simulations and games, offset the limitations of traditional methods and as a result increase active learning, promote creativity and add value to learning about interpersonal skills.

Military organisations have been using games as a learning tool for centuries (Cohen & Rhenman 1961, as cited in Pillay & James, 2013:10). They believe the two primary reasons for using games in business are that playing games is a lot of fun; involving a high degree of personal engagement; and – due to the competitive nature of games – many critical aspects are taught more effectively through games than any other traditional method. Azriel, Erthal and Starr (2013:296) trace the use of games in teaching back to the work done by Dewey (1938). Dewey realised the educational value of games as games motivate and help learners develop skills, abilities and strategies. From the discussion it is evident that these competencies cannot be successfully acquired using traditional training approaches such as classroom based training and a transition towards an integrated model of active learning using technology is required. This transition can be started by implementing experiential learning.

Experiential learning focuses on learners participating in real-life activities to create meaning, understanding and knowledge. Achieving learning outcomes as a result of experiential methods equip learners with the skills and knowledge, as well as an awareness of certain real-world phenomena (Kolb & Kolb, 2005; Kayes, 2002). While participating in experiential learning, concepts are formed and modified by experience. Over the years, many organisations and institutions have attempted to

implement experiential learning strategies to achieve learning objectives in their learning offerings. Studies focusing on experiential learning in organisations include a study by Train and Elkin (2001) focusing on incorporating experiential learning theory into a training programme for librarians, and the Engineering Projects in Community Service (EPICS) programme reported on by Chan (2012:407).

Experiential Learning Theory (ELT) consists of several models, all of which highlight the importance of direct experience and reflective observation. Kolb's theory of experiential learning (Kolb, 1984 & Kolb, 2005) is portrayed as a four stage model focusing on concrete experience, reflective observation, abstract conceptualisation, and active experimentation. I argue that Kolb's theory is influential and critical to the field of experiential learning due to its requirement of the adult learner to engage and participate wholly in the learning event. Adult learners are further required to experience, often by doing, to reflect on the experience, and to think and act in a cyclical sequence (Kolb & Kolb, 2005:194). Authors sharing Kolb's view include Fenwick (2001), Hedin (2010) and Boud, Keogh and Walker (1985).

Kolb (2005) further proposes that knowledge results from both grasping experience and then transforming the experience. In his four stage model, concrete experience and abstract conceptualisation depict grasping the experience, whereas reflective observation and active experimentation are the modes used to transform the experience (Hedin, 2010:111). Experiential learning theory, and the principles thereof, therefore provides a basis for the integration of gameplay and learning theory. By adopting game-based learning, organisations can use technology to enable a modern version of experiential learning for the adult learner in the workplace and at the same time master some of the challenges of learning in the 21st century.

Upon reflection, I can therefore draw a parallel between experiential learning and game-based learning. Game-based learning harnesses the imagination of an adult learner by creating a world to explore which motivates them to repeat challenges, achieve learning outcomes, reflect in the experience, and create new knowledge through transforming the game experience.

However, many learning games are designed merely to present content or facts to learners in a different format and learning theories are not applied in the development of learning games (Biro, 2014:148). Biro substantiates this statement by explaining that game-based learning theory has not been studied from a theoretical perspective and the development of an underlying theory remains strictly attached to raising the level of learner engagement in the learning. A further obstacle is that one of the key challenges of game-based learning is to integrate educational theories in the game design to create meaningful and engaging educational games (Kiili, 2005:14). Landers (2014:753) supports the views of Biro (2014) and Kiili (2005) by saying that the use of game-based learning in education and employee learning is becoming increasingly popular, but without theoretical models as foundation. We can surmise that these authors agree that for game-based learning to be truly experiential, learning theory needs to be integrated in the design. Research therefore needs to determine how adult learning theories, such as experiential learning, can contribute to game-based learning in the workplace. Experiential learning theory therefore forms the theoretical backdrop to game-based learning as the focus of this study.

The following research question therefore arises:

- *How can experiential learning theory be used to support game-based learning development in organisations?*

The main research question raises the following sub-questions:

- *What, if any, is the link between the concepts experiential learning and game-based learning?*
- *What would a framework linking the concepts of experiential learning and game-based learning look like?*

The study therefore explored experiential learning and game-based learning as a basis for enabling adult learning in the workplace. A conceptual framework illustrating the connection and interrelatedness between experiential learning and game-based learning design was used to substantiate this argument. The argument presented henceforth followed a non-empirical basis as a premise for the research design.

Steps 1 and 2 of Walker and Avant's concept analysis (1995) are addressed in Chapter 1 of this thesis, namely: step 1: select a concept; and step 2: determine the aims and the purpose of the study.

1.4 Research design

Research paradigms are different philosophies of knowledge and each paradigm informs a specific methodology in a logical and intelligible way (Henning, Van Rensburg & Smit 2004:16). Houghton, Hunter and Meskell (2012:34) support this view and emphasize the importance of the researcher to understanding that the chosen paradigm will influence all aspects of the research process. We can therefore say that the paradigm is the central component of the research plan and will inform the aims, methodology and methods.

Creswell (2009:6) reasons that the chosen paradigm can be seen as a bridge between methods and aims that represent the researcher's worldview and, in turn, guides the methods used in the research. Houghton *et al.* (2012:34) explain that a paradigm consists of three main components, namely ontology, epistemology and methodology. Ontology is the belief about reality. Epistemology is the relationship between the researcher and what can be known. And lastly, methodology is described as the way the research will be carried out given the research questions and context. Henning *et al.* (2004:15) provides some clarity by explaining that: "[e]pistemology is the philosophy of knowledge or how we come to know. Methodology is concerned with the specific ways, the methods that we can use to try and understand our world better." We can therefore say that epistemology and methodology are related in that the first comprises of the philosophy of how we come to know the world and the latter deals with how we practically get to know the world and how we study this practice.

Since my research process is guided by non-empirical concept analysis, based on a selective literature review, this study will be situated within an interpretive research paradigm.

1.4.1 An interpretivist approach as research paradigm

Walsham (1995:376) explains that interpretivism adopts the position that our knowledge of reality is a social construction by human actors. Henning *et al.* (2004:19) argue that the perspective of the interpretive researcher should be that "… observation is fallible and has error and all theory is revisable." Because of the fallibility, the interpretivist researcher should consider a variety of data from different sources. These different viewpoints "construct the world through different processes of observation" (Henning *et al*., 2004:20). Interpretivism therefore places value on the notion that a single scientific view cannot capture the world though multiple perspectives might do so. Interpretivist researchers therefore use meaning rather than measurement as methodology and focus on making sense of the world within a specific situation or context. Houghton *et al*. (2012:36) supports Creswell's view by concluding that reality is different for everyone and interpretivism acknowledges a subjectivist epistemology in which the researcher's perceptions can have an impact on the research.

According to Creswell (2009:8) interpretivists hold assumptions that people search for understanding in the world in which they live and work. Their reality consists of their subjective experiences of the external world. These meanings are varied and numerous and guide the researcher towards finding a complexity of views rather than narrowing meanings into a few categories. My research will therefore take into account various scholars' views of two key concepts, namely 'experiential learning' and 'game-based learning'.

1.4.2 Methodology

The research problem in this study was of a conceptual nature and therefore required the analysis of concepts and words (as opposed to empirical data) to arrive at comprehensible definitions for the concepts experiential learning and game-based learning, and to clarify the conceptual linkages between these concepts. Research using text as data is concerned with the analysis of concepts and words rather than numerical data and statistics. Such research enables the systematic collection and analysis of more subjective and narrative material (Burns & Grove, 1999:339), which may include existing texts.

Given that this study was aimed at analysis and clarification, concept analysis was deemed an appropriate methodology. As point of departure, it is important to have an understanding of the term concept. Fawcett (2012:285) defines a concept as a word or phrase that captures the essence of a phenomenon. Concept analysis is further defined as an activity where concepts, their characteristics, and their relation to other concepts are clarified (Nuopponen, 2010:4), as was done in this study. Baldwin and Rose (2009:780) describe concept analysis as: “a formal, linguistic procedure to determine the essential attributes of a concept”.

According to Walker and Avant (1995:3), using this type of methodology means that the use of words will be central to explaining the studied phenomena. A concept analysis process was utilised for the following concepts: ‘experiential learning’ and ‘game-based learning’. The aim was to determine individual attributes of these concepts and then look for possible conceptual relationships between the concepts in order to develop a conceptual framework which is presented in chapter 4.

Walker and Avant (1995:40) emphasize literature review as fundamental to concept analysis. Data collection the form of published texts and the analysis thereof was therefore a focal part of the research process. The authors explain that Wilson’s original concept analysis had eleven steps, which they have modified to eight steps. The latter approach was used for the study. The steps proposed by Walker and Avant (2005:160) that were followed for exploring the key concepts of the study are:

- concept selection;
- determine the aims and purposes of the analysis;
- identify all possible uses of the concept;
- determine the defining attributes;
- construct a model case;
- construct additional cases;
- identify antecedents and consequences; and
- define empirical referents.

For the purposes of this study, concept analysis was used to:

- distinguish between defining attributes and irrelevant attributes of the concepts experiential learning and game-based learning;
- clarify the meaning of the concepts experiential learning and game-based learning to ensure that the same understanding of the concepts exists;
- contribute to the development of a link between the concepts experiential learning and game-based learning;
- discover the uses of the concept experiential learning to determine its defining attributes;
- discover the uses of the concept game-based learning to determine its defining attributes;
- construct a framework linking the concepts.

This study sought to explore the concepts of experiential learning and game-based learning following eight concept analysis steps as suggested by Walker and Avant (1995, 2005) in the following manner.

Step 1: Concept selection

Walker and Avant (1995:40) emphasize the importance of concept selection as a first step in the concept analysis process. For concept analysis to be successful, the selected concepts need to be significant and useful to the research problem and should advance further development in the researcher's area of interest. The authors advise researchers to choose a concept that is most critical in their area of interest. Reference is made to Wilson (1963) when describing the process of concept selection as "isolating the concept", which refers to the investigation of the significance of the concept in various contexts and its relevance to the study (Walker & Avant, 2005:160). The importance of the concepts experiential learning and game-based learning emerged while I developed a game-based learning solution in my professional capacity. I found that learning games often focused on learner motivation and learner engagement only, while learning theory and increased competence were neglected as part of the learning design. Learning design – in the instance of game-based learning – should be based on sound learning theory, in this case experiential learning. During a preliminary literature review, the concepts for this study, namely, experiential learning and game-based learning were identified.

Step 2: Determine the aims and purpose of the analysis

According to Walker and Avant (2005:161) the second step in the concept analysis process is aimed at assisting the researcher to focus their attention on how they intend to use the results of the effort. The researcher should essentially answer the question: "Why am I doing this analysis?" Taking this notion into account, experiential learning and game-based learning were selected for analysis for the following reasons:

- The concepts signified an area of interest to the researcher.
- The analysis of the concepts and the conceptual framework could add value to the development of game-based learning in the field of adult education.
- The study aimed to show the lack of learning theory application in game-based learning design.
- The study was an attempt to demonstrate the importance of applying learning theory to any learning design.
- The study further aimed to explore the application of experiential learning theory in the design of a game-based learning solution.

The objective of the study is therefore to develop a conceptual framework showing the use of experiential learning theory in the design of game-based learning.

Step 3: Identify the uses of the concept

During step 3, the researcher is tasked with finding as many uses of the concept as possible. It is important to focus on all uses and descriptions of the concept and not to limit oneself to searching with the education or learning context. All uses of the concept are to be considered in this step (Walker & Avant, 2005:161). The researcher should only decide which aspects to consider once all uses of the concept have been identified.

I read extensively from a variety of sources to identify the uses of the concepts experiential learning and game-based learning. I consulted the following databases to obtain data:

- GoogleScholar;
- Google Books;

- WorldCat.org;
- ArticleFirst;
- Wiley Online Library;
- Springerlink;
- Academic Search Premier;
- Ebscohost;
- Sabinet Online; and
- SAGE publications.

The identification of the uses of the concepts was done through a literature review and the comparison of emerging themes. Definitions of the key terms were sought from various fields to assist the researcher in identifying defining attributes. Questions guiding data inclusion criteria for the concepts are listed in Table 1.1 below.

Table 1.1: Data inclusion criteria

Experiential learning	Game-based learning
What is experiential learning? What is the purpose of experiential learning? When is experiential learning applied? How does experiential learning enhance learning?	What is game-based learning? What is the purpose of game-based learning? When is game-based learning used? How does game-based learning contribute to the learning experience of adult learners? What learning theory/theories is/are applied when designing game-based learning?

Step 4: Determine the defining attributes

Walker and Avant (2005:162) place this step (step 4) at the heart of concept analysis. The objective of this step is to identify the group of attributes (or features and characteristics) that are the most frequently associated with the concept and allows the researcher the broadest insights into the concept. The researcher should focus on refining the attributes during this step to the fewest number of attributes that will differentiate the concept from other concepts.

For the purpose of this study I rigorously reviewed relevant literature, read and reread these sources, made notes and identified themes and recurring ideas to determine the defining attributes of experiential learning and game-based learning as explained in step 3 above.

Step 5: Construct a model case

"A model case is an example of the use of the concept that demonstrates all the defining attributes of the concept" (Walker & Avant, 2005:163). The authors quote Wilson (1963) in defining a model case as one in which the researcher can say, "if this isn't an example of it, then nothing is." Model cases can be actual examples from life, examples found in literature and an example constructed by the researcher (Walker & Avant, 2005:163). Examples of model cases for experiential learning and game-based learning will be discussed in chapters 2 and 3 of the study respectively.

Step 6: Identify additional cases

According to Walker and Avant (2005:164), examining cases that are not exactly the same yet are similar or contrary to the concept of interest will help the researcher to decide which attributes are most suitable to the concept of interest. The purpose of the additional cases is to help the researcher determine what can be deemed a defining attribute and what cannot. Additional cases are named borderline, related, or contrary cases. These cases may come from literature or may be constructed by the researcher as examples. Borderline cases are cases that reflect some but not all of the attributes of the concept. Borderline cases are useful to help clarify the defining attributes of the concept being studied (Walker & Avant, 1995:45). Related cases are related to the concept under study but do not contain critical attributes even though they resemble the concept. Related cases add insight into how and why the concept being studied fits into the network of concepts surrounding it (Walker & Avant, 1995:45). Contrary cases reflect the attributes that are not an instance of the concept being studied (Walker & Avant, 1995:45). In this study, examples of contrary cases will be discussed in section 2.6 of chapter 2 for experiential learning and section 3.6 in chapter 3 for game-based learning.

Step 7: Identify antecedents and consequences

Antecedents are events or incidents that need to be in place before the occurrence of the concept. Consequences, on the other hand are the events or incidents that transpire as a result of the occurrence of the concept – the outcomes of the concept (Walker & Avant, 2005:167). Both antecedents and consequences may deepen our understanding of the general context of the concept and therefore help to refine the critical attributes of the concept (Walker & Avant, 1995:45). For the purposes of this study the antecedents and consequences will be identified in section 2.7 of chapter 2 focusing on experiential learning and section 3.7 of chapter 3 for game-based learning.

Step 8: Define empirical referents

When nearing the completion of concept analysis the following question arises, "if we measure the concept or determine its existence in the real world, how do we do it?" Empirical referents are therefore classes or categories of actual phenomena that – through their existence – prove the occurrence of the concept itself. For example, "kissing" may be seen as an empirical referent for the concept "affection." In some cases the empirical referents and the defining attributes will be identical. It is important to understand that empirical referents are not tools to measure the concept, but are means to recognise or measure the defining attributes. We can therefore conclude that the empirical referents refer to the defining attributes and not the entire concept itself. In this study an example of empirical referents is to determine whether principles of experiential learning theory can be used in a game-based learning design. (See section 2.8 in chapter 2 for more details about the empirical referents of experiential learning and section 3.8 of chapter 3 for the discussion about empirical referents of game-based learning.)

This study will not have a chapter dedicated specifically to a literature review as I will be applying concept analysis as per Walker and Avant (2005) as methodology, which is a review of the literature of experiential learning and game-based learning.

1.5 Ethical considerations

In acknowledging the contributions of all sources and authors, I did not plagiarise any other author's work. As literature was used as the main data source and no human participants took part in the study, ethical clearance was not required.

1.6 Quality of the study

Rigour is the concept more typically applied to non-empirical research as this type of research is not experimental in nature. Saumure and Given (2008:2) explain that rigour is perhaps best described in terms of the quality of the research process. Therefore, a more rigorous research process will result in more trustworthy findings.

Tracy (2010: 840) focuses on eight different quality indicators in research using text as data. I aimed to enhance the trustworthiness of my study by applying Tracy's criteria in the following manner.

- Finding a *worthy topic* – is the topic relevant, timely, significant and interesting? The topic I chose can be deemed as worthy due to the recent advancement of game-based learning in the field of learning and development.
- Is the study *richly rigorous*, with reference to the suitability of the theoretical basis, appropriate methods employed and enough data sourced? I achieved rigor in my study by providing a clear, detailed and concise description on the steps followed in identifying the themes for each of the concepts and through the systematic analysis of various data sources.
- *Sincerity* – is the study characterised by good use of reflexivity and transparency?
- *Credibility* – does the research comprise of sufficient detail and explanation, inclusion of different perspectives and trustworthy findings? The concept analysis process included experiential learning theory and game-based learning. Both these concepts have an adequate theoretical foundation. I also included perspectives of the concepts citing a variety of scholars and authors to provide in-depth explanations of concepts to ensure credibility.
- *Significance* – does the study make a contribution on a range of levels, such as theoretical, practical, ethical, methodological? The study is aimed at

making a contribution to the theory of learning design when designing game-based learning, by extending existing knowledge about the interrelatedness and connection between experiential learning and game-based learning. The study could improve practise should learning and development practitioners consider the foundational principles of experiential learning when designing game-based learning in future. Lastly, the study could potentially generate ongoing research should a game-based learning intervention be designed using the conceptual framework as set out in chapter 4.

- *Ethical* – does the research take a holistic approach to research ethics? Research ethics pertaining to non-empirical studies was applied. I will further acknowledge contributions of all sources and authors in this study. My findings will be presented in such a way as not to mislead the reader and to ensure the intended meaning is conveyed accurately.
- *Coherence* – does the study achieve its purpose, use suitable methods, make meaningful connections between literature, findings and interpretations? I aimed to ensure coherence by an in-depth study of the chosen concepts. The concept analysis methodology lends itself to this process as it requires a very comprehensive literature study of the concepts. I will further develop a framework to show the connections between concepts, literature and my findings.

In the context of research using text as data, credibility is defined as: “the confidence that can be placed in the truth of research findings” (Polit & Hungler, 1999:362). Credibility helps determine whether the research findings represent probable information gathered from the original data collected and whether the interpretation of the original data is believable. Prolonged engagement is defined as: “the adequate submersion in the research setting to enable recurrent patterns to be identified and verified” (Krefting, 1991:217). For the purpose of this study, extended time was allowed for data collection and analysis. Data analysis required focusing on the aspects emerging from the data to help establish relationships between categories, themes and patterns which describe the concepts of experiential learning and game-based learning.

1.7 Outline of the study

The following structure was used to organise the thesis:

Chapter 1 introduces the study and provides the background to the study. The chapter further describes the research methodology used in the study.

Chapter 2 focuses on a detailed discussion about the historical roots of experiential learning followed by the concept analysis of experiential learning theory.

Chapter 3 centres on a review of the theoretical perspectives of game-based learning which then leads to the concept analysis of game-based learning.

Chapter 4 concludes the study, presents the findings and conclusions in the form of a conceptual framework.

1.8 Conclusion

This chapter introduced the study and discussed the need for a conceptual framework integrating experiential learning theory with game-based learning. The main concepts which form the foundation of the study were introduced. The research design and methodology were discussed and the research question was posed. An outline of the study was presented. In the next chapter a detailed discussion of experiential learning will follow.

Chapter 2
Concept Analysis: Experiential Learning

2.1 Introduction

In this chapter the concept and key aspects of experiential learning will be examined, followed by the detailed concept analysis thereof. This aims to create a broader understanding of experiential learning within the field of workplace learning and also guide us towards an in-depth understanding of the concept, the characteristics and uses thereof. The concept analysis will be the starting point for finding the interrelatedness between experiential learning and game-based learning.

2.2 Historical roots of experiential learning

Experiential learning is learning by actual experience. Meaning, understanding and knowledge are created when learners participate in real-life activities. Classroom training, as we traditionally know it, does not always allow for a deep understanding because of its passive, didactic nature. The active and practical experiential learning often allows for deeper understanding, especially in adult learning environments where learning by doing ideally forms a fundamental principle of all learning activities. Experiential learning theory is built on the work of 20th century scholars, notably John Dewey, Kurt Lewin and Jean Piaget, who all shared the view that experience should be central in learning and development (Kolb & Kolb, 2005:194). In his book *Experience and Education*, Dewey (1938:25) claims that there is one permanent frame of reference, that all learning (education) is connected to experience. He clarifies though, that regardless of the belief that all “real” education comes about through experience, it does not mean that all experiences are equally educational (Dewey, 1938:25). In this context, Dewey (as cited in Illeris, 2007) emphasizes the importance of two principles, namely continuity and interaction. Continuity by meaning a valuable experience has to be linked to a past experience and have an impact on future experiences. Interaction meaning that a valuable experience is linked to a transaction between a person and the environment. Illeris states that these two principles could be considered as requirements for learning to be considered experiential.

Dewey continues by arguing that people make sense of the world around them by using reflective thought to learn from their experiences. Chan (2012:406) supports Dewey's view and explains that for people to learn from an experience, they need to observe the current event, link it to a previous similar experience and evaluate the significance of the experience. Dewey's view supports a later statement by Chan (2012) that for learning to occur as a result of experience, the principles of continuity and interaction must be present. This means that experiences that provide learning are related and never isolated in time (Dewey, 1938:25). Therefore, every experience will relate to and obtain something from prior experiences and will transform the quality of future experiences.

Although Dewey did not use the expression "experiential learning" and his understanding of experience was broad and more in line with everyday experiences, the quality of the experience was central to his theory and he stressed the importance of distinguishing between experiences that are educational and those that are not (Illeris, 2007:85). Many of Dewey's ideas have been used as foundation for further work in the field of adult and higher education. The connection to game-based learning can be made in that many game-based learning initiatives are built on experiences, but can lose the educational aspect. Achieving this balance is the key to unlocking the learning transfer and application. Within experiential learning theory, learning is thus defined as: "the process whereby knowledge is created through the transformation of experience" (Kolb, 1984:41).

David Kolb (1984, 2005) built his model on the work of Dewey, Lewin and Piaget from a foundational understanding that learning from experience requires four different abilities. These abilities are:

1) the learner should be open and willing to be involved in new experiences,;

2) observational and reflective abilities is required to view new experiences from different perspectives;

3) analytical abilities to integrate ideas and create new concept from observations; and

4) decision-making and problem-solving skills to use new skills in practical situations (Merriam, Caffarella & Baumgartner, 2007:164).

Kolb (1984) further concurs with Dewey's (1938:25) view that all learning is cyclical. Although over time there are differing representations of how learning takes place in a cycle, two basic principles are consistent among all representations of the learning cycle. Hedin (2010:111) explains that learning takes place when an individual changes his/her thinking based on an experience and most importantly, by reflecting on that experience. Building on the historical theory and work of Dewey, Kolb developed a holistic model of experiential learning known as Kolb's Experiential Learning Theory (1984). Kolb's theory is portrayed as a four stage model focusing on concrete experience, reflective observation, abstract conceptualisation, and active experimentation. The four phases in the experiential learning cycle are interrelated and influence each other and, in turn, the learning process. Experiences are the foundation of what people perceive and the experiences guide their thoughts and considerations about a topic or event. During the thought process new concepts are formed from which decisions are made to provide guidance towards the application of the newly acquired knowledge or skills (Kolb & Kolb, 2005:194).

When applying Kolb's model, as done by Chan (2012:405-406), a learner lives through a concrete experience. This experience can be a simulated experience developed for a learning situation or a real-life workplace experience the learner encountered. During the second step – reflective observation – the learner will think about the experience and answer questions to create meaning and understanding of the experience. During step three, the learner will use the insight gained during reflection to create an abstract conceptualisation of the experience. Finally, the learner may apply the new knowledge and learning through active experimentation to determine how to improve the process in future and how the learning will continuously be revised and reshaped through experimenting (Chan, 2012:406).

Australian educator David Boud also emphasized the importance of reflection in Kolb's learning cycle. In his 1985 work with associates Walker and Keogh (Boud, Keogh & Walker, 1985), reflection is identified as a form of response to the learning

experience. According to the authors reflection is an activity in which people recapture their experience, think about it and evaluate it (Boud *et al*.1985:19).

The elements of this reflective process include:

- returning to experience – recalling or detailing concrete events;
- attending to (or connecting with) feelings – using helpful feelings and removing or containing obstructive ones; and
- evaluating experience – this involves re-examining the experience in the light of your intent and existing knowledge. It also involves integrating new knowledge into your conceptual framework.

In this model, the extent of the learning is influenced by the way in which a learner prepares for the experience, the level of participation in the actual experience and the process of re-evaluating and recalling the experience (Fenwick, 2001: 11).

Ileris (2007: 86) summarises Dewey and Boud's contributions by stating that, for learning to be labelled experiential, the learning should have elements of continuity and interaction and, to some extent at least, allow for learner control, involve the learner, and have some connection of the learning environment to the real environment. The learning should also allow for freedom from distraction, be self-directed in some way and allow the freedom to learn. These statements should be considered as ideas and contribution or indication of what experiential learning is about.

Other inputs include work by Hedin (2010:109), describing the two distinguishing features of experiential learning as "engaging the learner directly in the phenomena related to their studies and requiring them to reflect on the experience, analysing it and learning from it." Lewis and Williams (1994:5) contribute to the features explained by Hedin, by noting the importance of the way in which experiential learning differs from other learning approaches. Experiential learning provides an intentional process of experience and reflection about the experience in order to develop new knowledge and skills. Learning is experiential because the learner is directly in touch with the realities of what is learned. Keeton and Tate (1978:2) agree by saying that experiential learning involves a direct encounter with the phenomenon

being studied rather than the learner only thinking about the encounter or merely considering the possibility of the encounter.

Another influential author in the field of experiential learning, Peter Jarvis (1987, 2001), addresses impact of our psychological history on the learning situation (in Merriam et.al., 2007:164) Jarvis mentioned two types of learning from experience – non-reflective learning (remembering an experience and repeating it or doing what one is told), and reflective learning (during which a person plans, monitors and reflects upon experiences) (Jarvis, 1992:180). Jarvis considers both experiential learning (the result of experimenting in the environment) and reflective practice (thinking about and monitoring learning as it happens) as the highest forms of learning. He further notes that, ironically, the more experiences people have the less likely they are to allow for new learning and rather choose what is known and familiar (Jarvis as cited in Merriam et.al., 2007: 164).

An extensive body of research on experiential learning exists and it was therefore necessary to select literature that would specifically contribute to the focus of this study. The analysis of the relevant literature associated with experiential learning reveals that scholars consider reflection to be an essential ingredient of experiential learning, which necessitates the inclusion of Donald Schon's (Schön, 1987: 27) reflection in learning theory in this section.

Schön is a notable author in the field of experiential learning and his work focuses specifically on how reflection occurs for professionals in the workplace (Fenwick, 2001:12). Schön was particularly interested in how reflection and critical reflection occurs in continuous learning of professionals in the workplace. His major contribution has been to bring the notion of reflection to the center of the understanding of what professionals do through the ideas of reflection in and on action. Schön argues that when people start experiencing discomfort in their everyday activities at work, the reflective process starts. He maintains that when people are met with unique problems and situations they are prompted to reflect-in-action, during the experience to find possible solutions for the problem. His theory also allows for people to reflect after the experience, in what he calls reflect-on-

action. The latter type of reflection involves people to examine their actions, decisions, methods and possible alternative solutions.

Schön's work allowed other theorists and authors to refine his ideas of reflective practice. Peter Jarvis (1992:180) states that "[r]eflective practice is something more than thoughtful practice. It is that form of practice that seeks to problematise many situations of professional performance so that they can become potential learning situations and so the practitioners can continue to learn, grow and develop in and through practice."

Although Kolb's experiential learning theory is not the only experiential model that exists, I chose his model for the purpose of the study for a number of reasons. Firstly, the model can be applied to learning interventions across a number of disciplines and topics. Secondly, the theory is reliable due to the extensive body of research it has generated. Thirdly, Kolb's model is the combination of experience and reflection, which can be applied in innovative ways in the design of many different types of learning interventions. Finally, the learner-centered focus of the model is an important factor as it emphasizes the centrality of the adult learner whenever a new learning experience is created (as in the case of game-based learning interventions). Kolb is still relevant as author in the field of experiential learning and conducted a research project with colleague Yeganeh in 2012 focusing on experiential learning in the context of organisational development (Elsbach, K., Kayes, C.D. & Kayes, A: 2012). This research builds on the foundations of experiential learning cycle by exploring the effect of cultivating mindfulness in the practice of experiential learning (Hedin, 2010: 112).

Experiential learning became popular in the field of adult education as it recognises learners' own experiences as part of their knowledge development. In addition, experiential learning provides a means to acknowledge not only the process of learning, but also the result of newly developed skills and knowledge. In acknowledging the possibility of acquiring new skills and knowledge through experience, further educational interest was gained due to the value placed on practical knowledge and experiences in the workplace within an experiential framework (Fenwick, 2001:2). Andresen, Boud and Cohen (as in Foley, 2000: 225)

believes that experiential learning is based on a set of assumptions and summarises this as follows:

- experience is the foundation and stimulus for learning;
- learners construct their own experience by being actively involved;
- learning is a holistic process;
- learning is constructed socially and culturally; and
- learning is influenced by the context in which it occurs.

The authors also argue that experiential learning can be recognised and distinguished from other learning approaches by these features.

It is possible to say that the manner in which learners learn from experiences and integrate the learning into their body of knowledge has become the focus of experiential learning. Experiential learning therefore is the outcome of a process or intervention during which adult learners have the opportunity to practise completing a specific task, receive and give feedback about what they learned while practising, execute the task in a real-life situation, provide and receive feedback about what was successful and what was learnt, and determine what they need to do to improve their results. The experiential learning theory can thus provide a framework for the understanding of how adults learn through experiencing learning (Benecke & Bezuidenhout, 2011:55).

In this section, learner involvement in the learning process, reflection on the experience, transformation of the new knowledge into application, and reflection are highlighted by authors such as Knowles (1980), Houle (1996), Hedin (2010), Kolb (1984; 2005), and Chan (2012) as essential components of experiential learning. These components of experiential learning including ideas of learner engagement, direct learner involvement, and active learner participation point to the notion that experiential learning could be seen as the foundation for game-based learning which will be discussed in further detail in chapter 3 of the study.

Having addressed steps 1 and 2 of Walker and Avant's concept analysis in chapter 1 of this study, namely: step 1: select a concept; and step 2: determine the aims and

the purpose of the study, steps 3 to 8 will be the focus of this chapter. The same will apply to the concept analysis of game-based learning which will follow in chapter 3.

2.3 Step 3: Identify uses of the concept

According to Walker and Avant (2005:160), concept analysis requires the use of dictionaries and other literature as data sources to identify as many uses of the concept as possible and to ensure familiarity with the concept. The search approach followed the following sequence: searching online dictionaries for definitions, synonyms, and different uses of each concept. A literature search using keywords "experiential learning" and "adult learning" was then conducted. The literature gathered to find relevant information using the inclusion criteria (as listed in Table 1 in chapter 1) was then reviewed. Finally, online dictionaries, books and peer reviewed articles were used for the literature review and analysis. It is also important to remember that the chosen concepts are not just words but ideas, notions or characteristics connected with the words. Therefore, to understand how the terms are conceived and used, a detailed analysis of the terms will follow in the section below.

2.3.1 Dictionary definitions of experiential learning

The term "experiential learning" does not appear in any of the consulted dictionaries as one term. Seeing that this is a two-pronged concept, I therefore searched for definitions of the words "experiential" and "learning" independently. The results are as follows:

"Experiential" is defined by the Oxford Online English Dictionary (https://en.oxforddictionaries.com/definition/experiential) as "involving or based on experience and observation." The Merriam Webster Online Dictionary (https://www.merriam-webster.com/dictionary/experiential) describes experiential as: "relating to, derived from, or providing experience." The online Collins English Dictionary (https://www.collinsdictionary.com/dictionary/english/experiential) defines experiential as "resulting from experience." No other uses for the concept other than within this context were found during the search.

"Learning" is defined by the Oxford English Dictionary (https://en.oddictionaries.com/definition/learning) as: "The acquisition of knowledge

or skills through study, experience or being taught." According to the Merriam Webster Dictionary (https://www.merriam-webster.com/dictionary/learning) learning is: "(1) the act or experience of one that learns; (2) knowledge or skill acquired by instruction or study; (3) modification of a behavioural tendency by experience." The online Collins English Dictionary (https://www.collinsdictionary.com/dictionary/english/learning) provides the following definitions: "(1) Learning is the process of gaining knowledge through studying; (2) the act of gaining knowledge; (3) any relatively permanent change in behaviour that occurs as a direct result of experience."

2.3.2 Definitions of experiential learning

Chapter 1 made reference to a working definition of experiential learning to create a basic understanding of the term for the reader. However, the term "experiential learning" appears in literature from a variety of disciplines including psychology, adult learning, education, training and nursing literature.

It is evident from the literature review that there seems to be some consistency in the definitions of experiential learning. It is therefore not difficult to reach consensus about the uses and meaning of the concept, amidst similar definitions. As mentioned in chapter 1 (section 1.3) experiential learning stems from a wide range of theoretical foundations. Kolb (1984:15) explains that the theory originated from an integration of Dewey's pragmatism (as cited in Kolb, 1984: 15), Lewin's social psychology (as cited in Kolb, 1984: 15), Piaget's cognitive development (as cited in Kolb, 1984: 15), Rogers' client-centred theory (as cited in Kolb, 1984: 15), and Maslow's humanism (as cited in Kolb, 1984: 15), and Perls' gestalt theory (as cited in Kolb, 1984: 15). Kolb (1984:41) defines experiential learning as "the process whereby knowledge is created through the transformation of experience" and is developed on six assumptions. These assumptions include:

- learning is a process not an outcome;
- learning is a result of experience;
- learning requires a learner to resolve dialectally opposed demands;
- learning is all inclusive;
- learning requires the learner to be involved; and

- the outcome of the learning should be knowledge construction.

A further examination of literature provides a number of definitions for experiential learning. Yount (2001:276) defines experiential learning as: “active participation of learners in events or activities which leads to the accumulation of knowledge and skills.” According to Lewis and Williams (1994:5), “experiential learning means learning from experience or learning by doing”. Benecke and Bezuidenhout (2011: 55) agree that the manner in which learners learn from experiences and integrate the learning into their body of knowledge has become the focus of experiential learning inquiry.

We can therefore say that experiential learning is the outcome of a process or intervention during which adult learners have the opportunity to practise completing a specific task, receive and give feedback about what they learned while practising, execute the task in a real-life situation, provide and receive feedback about what was successful and what was learnt and to determine what they need to do to improve their results.

2.4 Step 4: Determine defining attributes of experiential learning

Determining the defining attributes of a concept is at the centre of concept analysis. These attributes are described as characteristics or criteria by Walker and Avant (2005:162) and help researchers to distinguish the concept from similar or related concepts. In order to describe the meaning of the concept, similar defining attributes which appear frequently in association with the concept are grouped together. These attributes also offer insights into the concept. In some instances, researchers may want to list as many attributes as possible, however, McKenna (1997:62) argues that it is preferable to have fewer attributes that truly characterise the concept.

From the literature review the attributes for experiential learning are presented below.

The emphasis of experiential learning is for learners to participate in real-life activities to create meaning, understanding and knowledge. For this type of learning to occur, learners need to be actively engaged in the learning experience. In

summary, experiential learning is based on the premise that people make sense of the world around them by using reflective thought to learn from their experiences. In order for people to learn from the experience, they need to observe the current event, link it to a previous similar experience and evaluate the significance of the experience to create knowledge (Kolb, 2005; Chan, 2012; Hedin, 2010; Fenwick, 2001).

To determine the defining attributes a rigorous process was followed during which I engaged with the literature extensively by reading, re-reading and studying the relevant literature. During this process, I identified characteristics which appear repeatedly in the literature. I then themed the characteristics together and ranked them based on the prevalence of the theme within the studied literature. This was executed meticulously as per the steps in the methodology by Walker and Avant (2005: 162). I also followed the suggestion by McKenna to identify less attributes but make sure it really characterizes the concept well.

The results from the literature enabled me to identify the following attributes of experiential learning as shown in Table 2.1. Knowledge created by transforming experience; actively engaged learner; and reflecting on experience received most literature support in the articles reviewed. Learn by doing followed these, however, for this study only the first three listed will be applied as attributes.

Table 2.1: Results of literature analysis to determine the attributes of experiential learning

Attributes	Sources
1. Knowledge created by transforming experience	Kolb & Kolb (2005), Dewey (1938), Chan (2012), Kolb (1984), Fenwick (2001), Andresen, Boud & Cohen (2000), Kayes (2002)
2. Actively engaged learner	Hedin (2010), Dewey (1938), Kolb & Kolb (2005), Chan (2012), Fenwick (2001), Boud *et al.* (1985), Andresen, Boud & Cohen (2000)

3. Reflecting on experience	Hedin (2010), Lewis & Williams (1994), Dewey (1938), Boud *et al*. (1985), Chan (2012), Train & Elkin (2001), Andresen, Boud & Cohen (2000), Kiili (2005)

In conclusion, for learning to be defined as experiential, the learner should be actively engaged in the learning process, create new knowledge through transforming the new experience after having had an opportunity to reflect on the learning experience. The table below provides a summary of the resources used in the determining of the attributes of experiential learning

Table 2.2: Summary of literature resources analysed to determine the attributes of experiential learning

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Citation	Summary
Kolb, A.Y. & Kolb, D. A. 2005. Learning styles and learning spaces: Enhancing experiential learning in higher education. Academy of Management Learning and Education, 4(2): 193-212.	The article provides a detailed historical overview of experiential learning theory, discusses a number of definitions of experiential learning and further explores how more recent development in the field can enhance the application of experiential learning. The authors introduce the concerto of learning spaces and provides information about the use of learning spaces in different settings within the framework of experiential learning.
Dewey, J., 1938. Experience and education. London: Collier-Macmillan.	In the book Dewey's discusses his views about education and the impact of experience on the learning process. He focuses on two types of education- traditional and progressive education. Traditional education which is based on transmitting static knowledge to largely passive student. Progressive education instead seeks to teach critical thinking through experiences.
Chen, C. & Law, V. 2016. Scaffolding individual and collaborative game-based learning in learning performance and intrinsic motivation. Computers in Human Behaviour, 55: 1201-1212.	The article provides an excellent summary of the history of experiential learning and the contribution of different scholars and authors. The article further provides a good summary of Kolb's experiential learning cycle and applies this to a community service project. The article aims to prove how applying Kolb's learning cycle to the students learning process helped them transform their learning experience. The author includes data from focus group interviews to prove that applying the experiential learning process can transform the learning experience.
Kolb, D. A. 1984. Experiential learning: Experience as the source of learning and development. Engelwood Cliffs. N.J.: Prentice Hall.	Kolb systematically describes the experiential learning process in his book building on the work of other authors in the flied such as Dewey, Lewin and Piaget. He introduces his four stage model of experiential learning across multiple subjects taking his foundation learning styles into account. His theory and model is mainly applicable to adult education and lifelong learning.
Fenwick, T., 2001. Experiential Learning: A theoretical critique from five perspectives. Information Series, 385: 1-77.	This article provides an in- depth review and critique of the constructivist orientation to experiential learning. The author further includes a concise summary of the work and theories of influential authors in the field of experiential learning including David Kolb and David Boud.

Table 2.2: Summary of literature resources analysed to determine the attributes of experiential learning continued

Andresen, L., Boud, D. & Cohen, R. (2000). Experienced based learning. Chapter published in Foley, G. (ed). Understanding Adult Education and Training. Second Edition. Sydney: Allen & Unwin: 225-239.	This chapter focuses mainly on identifying and defining the characteristics of experiential learning theory. The authors discuss some historical roots of the theory, a summary of a few models are explained, as well as influences, disputes and dilemmas.
Kayes, C.D. 2002. Experiential learning and its critics: Preserving the role of experience in management learning and education. Academy of Management Learning and Education, 1(2): 137-149.	Review, comparison and critique of Kolb's experiential learning theory. The author argues for continued application of experiential learning practice in management training specifically and then revises understanding of the concept of experiences to include the relationship between tacit and explicit knowledge. The article continues to further explore the impact of different perspectives and approaches such as cognition and critical reflection to management learning.
Hedin, N., 2010. Experiential learning: theory and challenges. Christian Education Journal, 7(1): 107-117.	This article discusses the foundational issues of experiential learning, definitions, historical origins, different models and processes related to experiential learning. The articles concludes with a discussion of experiential learning and its application in religious contexts.
Train, B. & Elkin, J. 2001. Branching out: a model for experiential learning in professional practice. Journal of Librarianship and Information Science, 33: 68-74.	The article reports the results of a study undertaken to investigate the applicability of experiential learning to a development initiative. The study combined the application of Kolb's learning cycle with Honey and Mumford's learning styles. As group and individual learning methods were the focus of the study the approach followed was to use the active experimentation and concrete experience phases of Kolb's cycle for group learning and embed the learning through individual reflection. The learning process was consolidated by abstract conceptualisation. The article provides an excellent example of the application of Kolb's learning cycle in practice.

Table 2.2: Summary of literature resources analysed to determine the attributes of experiential learning continued

Lewis, L. H. & Williams, C. J. (1994), Experiential learning: Past and present. New Directions for Adult and Continuing Education, 1994 (62): 5–16.	In addition to discussing what experiential learning is and how the theory developed, the article explores the application of experiential learning in higher education include field-based experiences, credit for prior learning and classroom-based learning.
Kiili, K. 2005. Digital Game-Based Learning: Towards an Experiential Gaming Model. Internet and Higher Education, 8: 13-24.	This article presents an experiential gaming model by integrating experiential learning theory, flow theory and game design. The model aims to provide a link between educational theory and game design and not a comprehensive model for the design of a complete game design.

2.5 Step 5: Development of model case: experiential learning

The purpose of the model case is to demonstrate examples of experiential learning while applying the defining attributes as discussed in section 2.3. According to Walker and Avant (2005:163) a model case is a clear example of the concept that includes all of the defining attributes of the concept. Walker and Avant (2005:163) further states that a model case may be an actual example from experience, an example found in literature or a constructed case. In this instance, the model case is an example from my professional experience. Certain details of the case have been changed for confidentiality purposes, as the example is from my work environment. The model case for experiential learning follows in the next paragraph.

A group of senior employees were identified to participate in a management development programme. The programme was designed as a blended learning experience, consisting of pre-course e-learning and a face-to-face classroom event for each topic. As part of the preparation for the face-to-face experience, learners were required to prepare a case study focusing on identifying critical issues their high-value clients face and to devise a framework explaining how they envisage having this issue framing conversation with their client. On arrival at the face-to-face session learners presented their cases to their peers and a panel of experts. They then attended a classroom session focusing on the theory of issue framing and preparing for having an issue framing conversation. As practical activity, learners then had to revisit their case studies and improve their approach based on the information received during the classroom session.

This model case represents an ideal example of experiential learning as it includes all the identified attributes of experiential learning. By reviewing and improving their initial case studies, learners were creating new knowledge by transforming the learning they experienced. Learners were actively engaged during the activity and to apply the new information to their initial case studies they had to reflect on the learning experience.

2.6 Step 6: Development of contrary case: experiential learning

Contrary cases are clear examples of what the concept is not. “A contrary case is one that has no or limited defining attributes of the concept being examined” (Walker & Avant, 2005:166). The contrary case will be used to demonstrate the absence of defining attributes of experiential learning. The lack of the defining attributes should enable the reader to identify the example as a contrary case. Walker and Avant (2005:166) further explain that contrary cases are helpful, as discovering what the concept is not, provides more clarity about what the concept should have as defining attributes. In this instance, the contrary case is an actual example from my observational experiences. Certain details of the case have been changed for confidentiality purposes, as the example is from my work environment.

In this instance, I attended a conference focusing on learning about a specific area of our business applicable to my team’s offering to our clients. As some team members work only in their areas of specialty, the session was aimed at providing us with knowledge and skills about the topic we are not familiar with. Because learning and development is a key driver within the business unit, the expectation was to have a practical, engaging learning experience. The session was presented in a lecture style and was non-experiential in nature. When determining whether the expectations of an experiential learning session were met, the answer is no. The lack of learner involvement, any form of practical activity or participation or knowledge creation renders this as an example of what experiential learning is not.

2.7 Step 7: Identify antecedents and consequences

Based on Walker and Avant’s (2005:167) theory of concept analysis, identifying antecedents and consequences are useful to explain the social context in which the concept is defined and also to further refine the defining attributes. It is important to note that a defining attribute cannot be an antecedent or consequence. Antecedents are events or incidents that need to be in place or exist for the occurrence of the concept. Consequences are the events and incidents that occur as a result of the occurrence of the concept, thus, the outcome of the concept (Walker & Avant, 2005:167).

2.7.1 Antecedents of experiential learning

While reviewing relevant literature about experiential learning, the components and application thereof, a number of antecedents were identified. Experiential learning starts with the notion that the learner wants to learn. The literature further indicates that learners often have prior knowledge and information about the topic and will use this prior knowledge and information when reflecting on the current experience to gain and create new knowledge. Another essential component required for experiential learning to occur is learner participation as the concept of experiential learning is mainly focused on the learner-centeredness.

2.7.2 Consequences of experiential learning

In the instance that a learning intervention is designed following experiential learning theory and meeting the criteria required for the intervention to be experiential in nature, the main consequence (or outcome) of experiential learning is active experimentation by applying new knowledge. Learner may then demonstrate the ability to apply what was learned during the learning intervention in the workplace and increase their knowledge and/or skills.

2.8 Step 8: Define empirical referents of experiential learning

Defining the empirical referents is the final step of Walker and Avant's (2005) concept analysis process. While concluding the analysis, the following questions need to be answered: "If we are to measure this concept or determine its existence in the real world, how do we do so?" Empirical referents are further defined by Walker and Avant (2005:168) as "instances that by their existence demonstrate the occurrence of the concept." It is also important to note that the defining attributes and empirical referents can be identical in some cases. Walker and Avant (2005:168) explain that empirical referents are not used to measure the concept but instead provide ways to identify or recognise the defining attributes and therefore relate to the defining attributes and not the entire concept.

Experiential learning empirical referents can be directly related to the defining attributes in that one will be able to prove the existence of the concept by observing the learner transform knowledge created by the experience, by being actively

engaged in the learning and reflecting on the experience. The existence of experiential learning in the real world can be demonstrated by observing learners in an experiential learning intervention. This concludes the concept analysis of experiential learning.

This chapter aimed to provide clarity about what “true” experiential learning involves. In this chapter I reviewed the historical roots of experiential learning with a focus on the work of David Kolb (1984; 2005). The fundamental application of experiential learning was demonstrated specifically through the development of defining attributes and the model, as well as contrary cases during the concept analysis.

In the next chapter the focus will be on game-based learning following the same concept analysis process.

Chapter 3
Concept Analysis: Game-based Learning

3.1 Introduction

In this chapter, game-based learning, its origin and significance in the field of learning will be explored. The chapter will further consist of a concept analysis leading towards a conceptual framework linking experiential learning and game-based learning.

3.2 Theoretical perspectives of game-based learning

Scholars have argued for the use of games for the purpose of learning (Kiili, 2004; Erhel & Jamet, 2013; Whitton & Moseley, 2015; Qian & Clark, 2016; Weitze, 2014). Using games for learning has attracted attention from facilitators of learning and researchers as it promises to motivate students and provide them with deep learning experiences (Weitze, 2014: 2).

In comparison to other learning theories, such as experiential learning, the field of game-based learning is fairly new. This point of view is supported by Biro (2013:150) when he explains the scope of development has focused mainly on how to design games to improve learner motivation and that the theory of games in learning has not been studied as a pedagogy or theory until recently. Both Weitze (2014) and Dede (2011) shares this view by stating that since no optimal pedagogy effective across every subject matter exists, the nature of the content and required skills should be the focus when researching how to use learning games in education (Dede as cited in Weitze, 2014). Furthermore, the curriculum, the context, and the characteristics of the students and the teachers should also be taken into account.

In research by Weitze (in Ratan & Ritterfield, 2009) the findings of a study including 600 learning games found that games have proven to be effective in the improvement of practicing skills (48%), cognitive problem-solving (24%), gaining knowledge through exploration (21%), and learning social skills (7%). The authors argue thus that, based on these findings, learning games may potentially be used develop certain domains.

It is furthermore important to note the difference between gamification and game-based learning. Although this study focuses on game-based learning, and the term is explained and deliberated in this chapter by means of a concept analysis, it is helpful to note the definition of gamification as it is also emerging in the field of adult learning as a new learning approach. Game-based learning can thus be described as a "…competitive activity in which students are set educational goals intended to promote knowledge acquisition. The games may either be designed to promote learning or the development of cognitive skills or else take the form of simulations allowing learners to practice their skills in a virtual environment" (Erhel & Jamet, 2013:156). Gamification, by comparison, refers to "game-based mechanics, aesthetics, and game thinking to engage people, motivate action, promote learning, and solve problems" (Kapp, 2012: 280).

The purpose of including game-like elements in a non-game learning environment is to engage and motivate learners and to promote learning and problem-solving. As with all game play, rules are needed to govern the play. The games they play involve interaction with the content and feedback is provided for the learners to master the game. Games are traditionally associated with fun. The fun element, however, is not the drawing card in educational game design. Educational games have to aim to engage and motivate players through direct experiences and provide opportunities to reflectively explore phenomena, test hypotheses and construct objects (Kiili, 2005:14). To ensure a learning game has meaning a learning task should require appropriate cognitive capacity to ensure knowledge is constructed. However, if the learning task is engaging, the learner will be more inclined to use more effort to complete the task (Kiili, 2005:14). In the subsection that follows, learner engagement and its importance in game-based learning is explored.

3.2.1 Learner engagement

Skinner and Belmont's (1993:571) definition of engagement in an educational context can be applied to the learner's experience in game-based learning. In this context, Skinner and Belmont (1993:571) define engagement as the "intensity and emotional quality of a user's (learner's) involvement in activities accompanied by a positive emotional tone." Engaged learners are more likely to sustain behavioural and cognitive involvement in completing the game challenges. Kiili *et al.* (2012:79) share Skinner and Belmont's view and state that learning games have to be

designed to incorporate learner engagement that integrates with educational effectiveness, but cautions that the challenge is to find the balance between gameplay and achieving learning outcomes. Although evidence proving the impact of engagement on learning directly is sparse, there is convincing evidence suggesting that game-based learning can create a greater sense of engagement with the learning activities of the game (Whitton & Moseley, 2015:439).

In the context of games and learning, two types of engagement exist. The first type of engagement is the learner's engagement with the game itself, and the second is the learner's engagement with the learning outcomes associated with playing the educational game. Ideally, the outcomes of the game should be in alignment with learning outcomes to ensure the engagement with the game is the same as the engagement with the learning outcomes. It should also be stressed that for learners to gain the most learning value from the game, they will need the opportunity to reflect and discuss with their peers – much like the reflection stage of experiential learning theory (Whitton & Moseley, 2015:440). We can therefore say that a high level of learner involvement and engagement is necessary for game-based learning to be successful.

What is the relationship between learner engagement and learning? Whitton and Moseley (2015:440) argue that it is easier to measure the level of engagement achieved during game-based learning than measuring if actual learning took place. However, the authors reason that if the learning activity or game engages the learner they will learn more from it. The authors thus support the view of Parsons and Taylor (2011, as cited in Whitton and Moseley, 2015:440) that when engagement occurs as a result of participation and behaviour, a strong relationship between engagement and learner achievement can be observed. Parsons and Taylor (2011, as cited in Whitton and Moseley, 2015:439) claim that further evidence exists proving that engaging on the level of "time and task" and "participation" have a positive influence on learning. Whitton (2011:596) concurs with these statements by saying that although all learning games will not engage learners in all situations, when used educationally to support learning, games can increase opportunities for reflective learner engagement.

A further finding supporting the views of Parsons and Taylor (2011, as cited in Whitton and Moseley, 2015:439) stems from a study by Whitton (2011:601). The author conducted twelve in-depth interviews as part of a study to gain a greater understanding of the attitude and experiences of adult learners with game-based learning. A finding from the interviews was that adult learners are not prepared to learn from a game only because it is a game. The participants stated that they would be willing to partake in game-based learning only if the game was an effective learning method and made a clear contribution to their learning. We can therefore agree with Kiili, De Freitas, Arnab and Lainema (2012:78) that educational games have to be well-designed to include learner engagement – a critical component of educational effectiveness.

3.3 Step 3: Identify uses of the concept

As a point of departure for this section, my search approach followed the following sequence: searching online dictionaries for definitions, synonyms, and different uses of each concept. As with experiential learning, I then performed a literature search using keywords “learning games” and “game-based learning”. I then reviewed the literature gathered to find relevant information using the inclusion criteria as listed in Table 1.1 of chapter 1. Finally, online dictionaries, books and peer reviewed articles were used for literature review and analysis.

3.3.1 Dictionary definitions of game-based learning

As with the term “experiential learning”, the term “game-based learning” does not appear in any of the consulted dictionaries as one term. I therefore searched for the definitions of the parent words “game” for game-based and “learning”. The results are as follows (I excluded the results for learning as it is consistent with the results in section 2.3.1).

The word “game” has several definitions and uses across different disciplines and in different contexts. Walker and Avant suggest (2005:161) that the uses of the concept across different disciplines should be considered, but caution against full exploration as it will be impractical and irrelevant to this study. To this end, the various uses of the term “game” are considered but limited to definitions only. In the online Oxford English Dictionary (https://en.oxforddictionaries.com/definition/game) a game is

defined as: “an activity that one engages in for amusement or fun”. In the Merriam Webster Online Dictionary (https://www.merriam-webster.com/dictionary/game) a game is described as “physical or mental competition conducted according to rules with the participants in direct opposition to each other.” The online Collins English Dictionary (https://www.collinsdictionary.com/dictionary/english/game) defines a game as: “an activity or sport usually involving skill, knowledge, or chance, in which you follow fixed rules and try to win against an opponent or to solve a puzzle.” Both the Merriam Webster Dictionary and the Collins English Dictionary list a number of other definitions indicating different uses or aspects of the concept of a game. These definitions include:

(1) a field of gainful activity, for example, the newspaper game;

(2) any activity undertaken or regarded as a contest involving rivalry, strategy, or struggle, for example, the dating game, the game of politics;

(3) an area of expertise or specialty, for example, comedy is not my game;

(4) wild animals hunted for sport or food or the flesh of game animals.

For the purposes of this study, a “game” will be considered in the context of an activity in which a person may partake.

3.3.2 Literature definitions of game-based learning

In chapter 1 I make reference to a working definition of game-based learning to create a basic understanding of the term for the reader. The term “game-based learning” appears in psychology, adult learning, education, training, gaming and technology related literature. These fields are all relevant to the study and appropriate definitions will be discussed.

Game-based learning refers to learning actions carried out in formal and/or informal educational settings by adopting games. It focuses on the use of games designed expressly for fulfilling learning objectives (educational games) (Kirriemuir & McFarlane, 2004:19). Qian and Clark (2016:50) provide the following definition: “Game-based learning (GBL) describes an environment where game content and game play enhance knowledge and skills acquisition, and where game activities involve problem solving spaces and challenges that provide players/learners with a sense of achievement”. Salen and Zimmerman (2004:80) simplify the term “game-

based learning" by defining a game, within the education context, as "a system in which players engage in an artificial conflict, defined by rules, that results in a quantifiable outcome." Game-based learning therefore facilitates learning by increasing learner attention spaces and adding an element of fun during the interactions and learning processes.

Taking the definitions mentioned above into consideration, game-based learning can also simply be described as "a type of game play with defined learning outcomes" (Plass, Homer & Kinzer, 2015:258). The authors further argue that games can only reach their potential as learning experiences when all aspects the game should consist of (including learning outcomes, motivation and learner engagement) are taken into account in the design of the game. This view is supported by Plass, Perlin and Nordlinger (2010, as cited in Plass, Homer & Kinzer, 2015:259). The authors maintain that the design process of games for learning involves balancing the requirement to cover the subject matter and learning outcomes with the desire to prioritise gameplay and game elements.

Proponents of game-based learning, such as Connelly, Boyle, MacArthur, Hainey and Boyle (2012), suggest that educational games encourage a positive experience which may help facilitate learning and the acquisition and consolidation of knowledge through practice, by creating a virtual environment which allows the learner to see the connections between the learning experience and real-life work more rapidly. Prensky (2007) argues that the game-based learning process can be deemed effective due to increased engagement which occurs when learning is presented in a game context. Game-based learning's effectiveness can further be associated with the motivational power of digital games due to their ability to allow learners to "learn by doing" – a fundamental principle of experiential learning theory – making games a captivating learner tool (Carenys & Moya: 2016:610).

A literature review has been presented in order to articulate the meanings of game-based learning. In order to provide clearer understanding of the concept the defining attributes are discussed next.

3.4 Step 4: Determine defining attributes of game-based learning

The same process as in section 2.4 was followed to determine the defining attributes of game-based learning. The results from the literature review led me to identify the following attributes of game-based learning as shown in Table 3.1 "High level of learner engagement" received the most literature support in the articles reviewed followed by "achieve learning outcomes" and "increased learner motivation."

Table 3.1: Results of literature analysis to determine the attributes of game-based learning

Attributes	Sources
1. High level of learner engagement	Romero (2015), Coates (2007), Landers (2014), Carenys & Moya (2016), Plass *et al* (2015), Erhel & Jamet (2013).
2. Achieve learning outcomes	Romero (2015), Giessen (2015), Whitton (2011), Kiili (2005), Landers (2014), Carenys & Moya (2016), Plass *et al* (2015), Erhel & Jamet (2013).
3. Increased learner motivation	Whitton (2011), Kiili (2005), Landers (2014), Carenys & Moya (2016), Plass *et al* (2015), Chen & Law (2016).

The relevance of the attributes of game-based learning is therefore that through increased learner motivation (to participate) the learner needs to achieve learning outcomes by being engaged in the learning game. The table below is a summary of the literature analysed during this step.

Table 3.2 Summary of literature resources analysed to determine the attributes of game-based learning

Citation	Summary
Romero, M. 2015. Work, games and lifelong learning in the 21st century. Social and Behavioural Sciences, 174: 115-121.	The article discusses the changes affecting our daily lives because of the rapid development of technology during the past two decades. The change has brought about changes in the way we work and learn and the article emphasizes the requirements for adult learning in the 21st century, introduces the concepts of gamification and serious games in learning and proposes a game- based learning design methodology.
Coates, H. 2005. The value of student engagement for higher education quality assurance. Quality in Higher Education, 11(1): 25-36.	The article provides information about the principles and practices of quality assurance in higher education with an introduction to student engagement
Whitton, N. 2011. Game Engagement Theory and Adult Learning Theory. Simulation & Gaming, 42(5): 596-609	The author examines the principles of game design in game-based learning by researching game design principles from games designed for entertainment. The findings of the research and interview date are applied in an educational context. The author further discusses five factors that influence engagement in learning activities using practical examples.
Kiili, K. 2005. Digital Game-Based Learning: Towards an Experiential Gaming Model. Internet and Higher Education, 8: 13-24.	This article presents an experiential gaming model by integrating experiential learning theory, flow theory and game design. The model aims to provide a link between educational theory and game design and not a comprehensive model for the design of a complete game design.
Giessen, H.W. 2015. Serious games effects: an overview. Social and Behavioral sciences, 174: 2240-2244.	Games and gamification were identified as one of the main trends in elearning for the future. The article explores whether there are any learning value to be gained from designing games for learning based on research already conducted
Chen, C. & Law, V. 2016. Scaffolding individual and collaborative game-based learning in learning performance and intrinsic motivation. Computers in Human Behaviour, 55: 1201-1212	The article provides a detailed introduction to game-based learning and the suggested benefits thereof as a learning tool or approach. It examines motivation and learning and includes results of a study including 254 students examining the effect of scaffolding on learners' motivation and learning performance to provide support for game-based learning environments

Table 3.2 Summary of literature resources analysed to determine the attributes of game-based learning continued

Qian, M. & Clark, K. 2016. Game-based learning and 21st century skills: a review of recent research. Computers in Human Behaviour, 63: 50-58.	The article focuses on the integration of games and learning to increaser learner motivation.
Landers, R. 2014. Developing a Theory of Gamified Learning: Linking Serious Games and Gamification of Learning. Simulation and Gaming, 45(6): 752-768.	The author defines the concepts of gamification, game-based learning and serious games as an introduction. The article further explains the theory of gamified learning by means of four propositions
Carenys, J. & Moya, S. 2016. Digital game-based learning in accounting and business education. Accounting Education, 25(6): 598-651	The article provides a detailed review of digital game based learning in the accounting industry. The content reinforces the foundation knowledge about of digital game based learning and the practical application thereof
Plass, J.L., Homer, B.D., & Kinzer C.K. 2015. Foundations of Game-Based Learning. Educational Psychology, 50(4): 258-283	The articles provides detailed definitions of game-based learning and gamification before focusing on the theoretical models of learning with games, design elements of games for learning purposes and further argues about the impact of theories from the fields of psychology and education on games in learning. The conclusion emphasizes all the perspectives that needs to be taken into account for the design of truly impactful learning games
Erhel, S. & Jamet, E. 2013. Digital game-based learning: Impact of instructions and feedback on motivation and learning effectiveness. Computers & Education, 67: 156-167	The article explores the effects of digital game based learning on learning and motivation

3.5 Step 5: Development of model case: game-based learning

As per the explanation in chapter 2 section 2.5, the purpose of a model case is to demonstrate an example of game-based learning while applying the defining attributes as discussed in section 3.4. In this instance, the model case is an actual example from my observational experiences. Certain details of the case have been changed for the purpose of confidentiality, as the example is from my work environment.

A partner firm developed a digital application for learners to use game-based learning to learn the fundamentals of accounting for a four-week period prior to a board exam. The team decided to design and build the app and use game-based learning for this audience because of the nature of the content. Learners were able to access different modules covering key learning points in a gamified format, compete against their colleagues and earn points which allowed them to “skip” a pre-exam lecture if they scored enough points for the duration of the challenge. Based on the attributes identified: high level of learner engagement, achieve learning outcomes and increased learner motivation, this is an excellent example of a model case.

By tracking learners' activity, scores and time spent playing the game on the app the team could conclude that the game was successful in ensuring the learners were prepared for the board exam.

3.6 Step 6: Development of contrary case: game-based learning

As explained in chapter 2, section 2.6, contrary cases are clear examples of what the concept is not. “A contrary case is one that has no or limited defining attributes of the concept being examined” (Walker & Avant, 2005:166). This contrary case will be used to demonstrate the absence of defining attributes of game-based learning in this example. In this instance, the contrary case is an example based on my observational experiences. Certain details of the case have been changed to provide confidentiality, as the example is from my work environment.

In this example, our learning team designed a game for a client to support the implementation of a new ERP system. At the time of designing the game, the team thought they were designing a game-based learning experience but, considering the definition and literature reviewed of game-based learning, the game was definitely not game-based learning as per our definition thereof. There were some elements present such as a graphic rich theme, leaderboard for learners to track their position based on challenges won, however, management had to offer employees rewards to complete each level of the game as there was very low participation. The game had no defined learning outcomes that could add value to their experience of the new system and an increase in knowledge about it, learner engagement was very low because the game was too basic – in hindsight the questions were not challenging enough to motivate learners to take the time to play the game and therefore a sufficient example of a contrary case.

3.7 Step 7: Identify antecedents and consequences

Based on Walker and Avant's (2005:167) theory of concept analysis, identifying antecedents and consequences are useful to explain the social context in which the concept is defined and also to further refine the defining attributes. It is important to note that a defining attribute cannot be an antecedent or consequence. Antecedents are events or incidents that need to be in place or exist for the occurrence of the concept. Consequences are the events and incidents that occur as a result of the occurrence of the concept, thus, the outcome of the concept (Walker & Avant, 2005:167).

3.7.1 Antecedents of game-based learning

In this instance only two antecedents of game-based learning were identified. The first is that a game has to be designed following game-based learning theory, in other words – a game must exist. The second is that learners need to have access to the relevant technology to participate and complete the learning game.

3.7.2 Consequences of game-based learning

The consequences of game-based learning are similar to those of experiential learning. As with experiential learning the learner will have increased knowledge and skills once they have played the learning game.

3.8 Step 8: Define empirical referents of game-based learning

Defining the empirical referents is the final step of Walker and Avant's concept analysis. As explained in chapter 2, section 2.8, the question: "If we are to measure this concept or determine its existence in the real world, how do we do so?" needs to be answered.

As with the empirical referents of experiential learning (chapter 2, section 2.8), game-based learning empirical referents are closely related to the defining attributes. One can demonstrate the existence thereof in the real world by observing learner engagement and motivation to participate and complete a game-based learning intervention and by measuring whether learners have achieved the outcomes of the intervention on completion of the game-based learning intervention.

In this chapter game-based learning as a "new" approach to workplace learning was introduced. The origins of using games in learning was discussed and key elements of game-based learning, such as learner engagement and learner motivation, were identified. The concept was further explored by using a number of definitions and during the concept analysis I found many similarities with experiential learning (as discussed in chapter 2). In the next chapter I will aim to conceptually illustrate the interrelatedness between the two concepts to answer the research question posed in chapter 1.

Chapter 4

Findings, Conclusion and Conceptual Framework

4.1 Introduction

This chapter sets out to summarise the study and findings of the concept analysis. The study followed a non-empirical basis as a premise for the research design and Walker and Avant's (2005) concept analysis was applied as methodology. During the concept analysis, a clear relationship or interrelatedness between the concepts emerged. The main research question was aimed at exploring how experiential learning theory can be used to support game-based learning in organisations by asking:

> *How can experiential learning theory be used to support game-based learning development in organisations?*

Two sub-questions arose from the main question namely:

- What, if any, is the link between the concepts experiential learning and game-based learning?
- What would a framework linking the concepts of experiential learning and game-based learning look like?

My answers to the two sub-questions listed here are addressed in the sections that follow.

4.2 Sub-question 1: Linking experiential learning and game-based learning

The following conclusions can be made based on the literature presented in the concept analysis in chapters 2 and 3 to show the interrelatedness between experiential learning and game-based learning.

Both experiential learning and game-based learning:

- has a set of educational outcomes or objectives the learner has to achieve;
- is developed from a learner-centred approach, which places the learner and not a facilitator at the core of the learning process;
- requires the learner to be actively involved in the learning process and is developed on the principle of "learning while doing";

- is focused on the learner's own experience and transforming the learning into knowledge that is of personal significance to him/her;
- requires learner engagement for learning to take place;
- includes an element of reflection – although more explicit in experiential learning due to Kolb's "reflective observation" step, game-based learning lends itself towards providing the learner with the opportunity to reflect when a challenge is not completed successfully and they have to "replay" the challenge to achieve the outcomes; and
- considers learner motivation to be intrinsic and necessary for learning to take place.

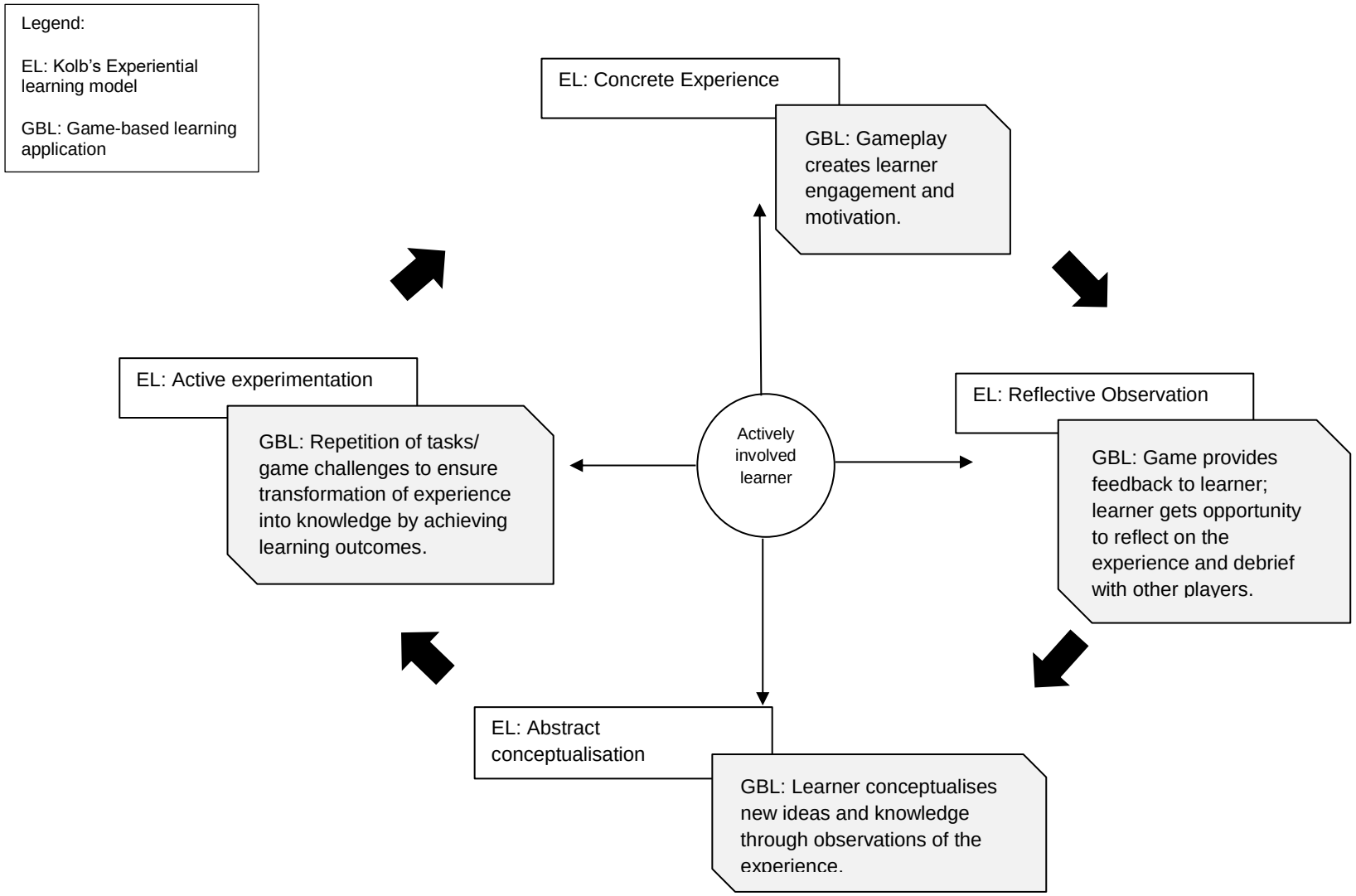
It is therefore evident that the two concepts are similar and interrelated. To substantiate my conclusion, further evidence from literature discussed in the next paragraph provides a link between game-based learning and experiential learning theory.

Findings from a study conducted by Soma and James (2013:17) provide a clear connection between the use of game-based learning and its relationship with experiential learning theory. Notable similarities to experiential learning from this study include that games encourage repetition of challenges or tasks toward knowledge transfer because the learner has the opportunity to engage in multiple learning components. Another notable similarity is the opportunity to debrief with the other learners during game-based learning. Reflection during sessions in the study led to the construction of new concepts. The new concepts were tested through active experimentation and as a result experiential learning became critical in the process of transferring knowledge gained during the game-based learning event. It is therefore suggested that experiential learning could be used as a theoretical foundation for game-based learning. For example, the definitive goal of game design for game-based learning is to create interesting experiences for the learners. Dewey (1938) states that experiences are a result of interplay between the present situation and past experiences. This is one of the design principles of game-based learning.

According to Kiili (2005:17), the principles of experiential learning provide a suitable basis for the integration of game-based learning into the field of adult education. The model of continuous learning-feedback-learning in experiential learning provides a basis for goal-directed action and the integration of gameplay and educational theory. Kiili (2005:14) states that educational theories need to be integrated into game design for the game to be an educational and engaging learning experience. According to Giessen (2015:2241), most games allow for reflective experiences and are therefore connected to learning. Considering the findings that most games allow a connection to learning through reflective experience and active participation, one can conclude that game-based learning is primarily built on the principles of experiential learning theory.

4.3 Sub-question 2: A framework linking experiential learning and game-based learning

Figure 4.1 Framework linking experiential learning and game-based learning



The framework provided in Figure 4.1 was designed to show how each phase of Kolb's (1984; 2005) experiential learning cycle can be applied to game-based learning. The illustration is based on the four phases of experiential learning namely, concrete experience, reflective observation, abstract conceptualisation, and active experimentation. Game-based learning elements are then linked to each of Kolb's corresponding phases to show how game-based learning can be developed using experiential learning as a foundation. A key component of both experiential learning and game-based learning, namely, the actively involved learner, is at the core of the illustration which also emphasizes the learner centeredness of both approaches.

The illustration and explanation therefore answers my main research question:

> *How can experiential learning theory be used to support game-based learning development in organisations?*

In chapter 1 in section 1.4.2 I discussed concept analysis as chosen methodology for the study. As per step 2 of Walker and Avant (2005:161), determine the aims and purpose of the analysis, I explained my motivation for choosing experiential learning and game-based learning as concepts. I am returning to these to indicate how the points were addressed and to answer my main research question.

- The concepts signified an area of interest to the researcher.

In sections 2.5 and 3.5 respectively I used examples from my professional experience to explain the notion of developing a model case for both experiential learning and game- based learning. I again described examples of contrary cases for both concepts in sections 2.6 and 3.6 from my practical experience which indicate my interest in experiential learning, game-based learning and the field of adult education.

- The analysis of the concepts and the conceptual framework could add value to the development of game-based learning in the field of adult education.

The concept of game-based learning is analysed in chapter 3 of the study. A better understanding of the game-based learning and considering the application of the conceptual framework in game-based learning design is illustrated and discussed in chapter 4.

- The study aimed to show the lack of learning theory application in game-based learning design.

In chapter 1, section 1.3, the absence of game- based learning theory in game-based learning design is introduced. The statement is further discussed in chapter 3, section 3.2 and game-based learning is explored as a relatively new field within adult education.

- The study was an attempt to demonstrate the importance of applying learning theory to any learning design.

The necessity to integrate educational theories in the design of learning games to create games that will have educational value is substantiated in chapter 4, section 4.2.

- The study further aimed to explore the application of experiential learning theory in the design of a game-based learning solution.

The conceptual framework in chapter 4 addresses the possible application of experiential learning theory in game-based learning design.

4.4 Implications of the study

As a result of the study the following implications should be considered.

4.4.1 Theoretical implications

The study creates an opportunity for researchers in the learning and development field to evaluate existing literature on designing game-based learning and to further develop a comprehensive approach which utilises and includes experiential learning as a foundation to support the development of game-based learning by focusing on including elements of experiential learning such as learning outcomes, self-assessment and reflection opportunities.

4.4.2 Practical implications

The study offers organisations an opportunity to review current game-based learning design methods in their organisations and to consider using experiential learning as a foundation. By using experiential learning as a foundation, organisations can ensure learning is designed to achieve outcomes, which will assist organisations to meet the 21st century challenges – as discussed in chapter 1 – and to help improve

organisational performance as result of effective learning. To test if the conclusion of the study will in fact support the design of game-based learning, one could conduct a project to design a game-based learning intervention by applying the model and literature as discussed in Figure 4.1

4.4.3 Implications for possible future research

The value of using experiential learning theory when designing game-based learning can possibly be explored by means of an empirical study. The researcher can design two games- one using the proposed framework in Figure 4.1 and report the findings of a test groups' achievement of the learning outcomes after playing the learning game and a second by designing a game focused purely on learner engagement and comparing the achievement of the learning outcomes after playing the game of the same test group.

4.5 Conclusion

When considering all the sources and literature reviewed in this study it becomes clear that significant research is being done specifically focusing on game-based learning as a relatively novel approach to learning in organisations. Organisations should therefore consider including game-based learning and the application thereof as part of their workplace curriculum to further address the current challenges with traditional classroom-based training and to move towards a more experiential learning approach for their employees.

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