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THE EXPLORATION OF LEARNING IN SECOND LIFE: A FOCUSED ETHNOGRAPHIC STUDY IN UNDERGRADUATE NURSING

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Dedication

I dedicate this dissertation to my parents, Denise and Cecil Hills. To my mother, a dedicated teacher for 43 years, who will always be my sage on the stage. And to my father, who taught me the value of and the endless possibility in self-determination.

The Researcher

In keeping with the conventions of focused ethnography, I can confidently claim an extensive knowledge of the workings of academia, nursing and undergraduate nurse education as well as a penetrative insight into these cultures. I have taught nurses for eighteen years and have been a Registered Nurse for twenty-four years. In fact, my graduating cohort was the first to be offered a Bachelor of Nursing (BN) where I studied. Prior to this, I held an Enrolled Nurse (EN) Diploma (now known as an Associate Diploma).

In stark contrast to my three year BN, my diploma consisted of a comprehensive forty weeks paid work in a hospital, interspersed with twelve weeks of theoretical content; learning on the job in the historical mould of nurse education. Practicing on the ward, while still learning in an apprenticeship-style, was terrifically beneficial as this served to consolidate theoretical content immediately upon learning.

During my undergraduate program, which was essentially in the same structure in which I presently teach, we had limited practical hours and only a small portion of those in an acute care environment; the setting in which most of us would spend our graduate year. I was fortunate though, because I found that I could assuage my feelings of terror and inadequacy by relying heavily on my previous experience as an EN. I observed a distinct disparity between the few students like myself, who had an EN qualification, as a foundation and those who were utterly new to the clinical nursing environment. Our speed and proficiency stood out. I was watching the manifestation of the 'theory-practice gap' and kept thanking my lucky stars that it was not me teetering on the edge of that gulf.

Since then, my professional experiences have been diverse and consistently challenging, unpredictable and rewarding. I have worked in a metropolitan critical care ward where, I assisted in the emergency, open cardiac massage of a two-day-old old baby and I have worked in a remote hospital outpatients' clinic, where my first patient was a dog needing drainage of

an infected abscess. I have held new life in my hands as I helped to bring it, wailing, into the world and I have silently held the hand of the dying; listening to pause between breaths to grow longer and waited for the final one.

Once I had developed this road skill set, I felt I could share my knowledge and I began working with undergraduate nursing students as a clinical facilitator. My role was to help novice nurses begin to make connections between theory and practice in the clinical environment. Being a facilitator meant I greeted a new cohort of students every two to four weeks, at various stages in their program. This demanded an ability to establish rapport quickly, so that they could perceive me as their ally. Given how stressful and intimidating the acute hospital environment can be, many of the students floundered, at least initially. One of the most pivotal aspects of my role as facilitator was to determine each student's skill level, which invariably seemed much lower than it actually was, because of the difficulty of translating on-campus taught skills into this entirely unfamiliar context.

Fifteen years ago, I moved to academia where I found that I could offer students a connection to the clinical world by sharing my practical experiences. The dilemma faced by myself, and indeed nurse academics in general, is that the relevance of one's stories fades rapidly unless you keep them fresh by taking on clinical practice, as I have always done.

We are strangely the only profession that has some impenetrable classification of what is an authentic nurse. If you somehow function outside of this realm—you aren't genuinely a nurse and the culture can be disapproving. I continue to work clinical shifts for professional reasons to: be aware of changes in the research-driven practice, have tangible experience of the clinical workplace culture, and continually challenge myself about the best preparation for my students.

To this end, and as part of my lecturing position, I have coordinated practical experiences and trialled various facilitation models to maximise student clinical engagement. More recently, a large part of my role is developing online, learning courses for

undergraduate nurses, which generate varied responses. Some students reported that the online experience was enjoyable whilst others preferred face-to-face learning. What was appealing about learning online for some students and not others? Was it the content or the method of delivery? Did learner attributes play a role or the educator's competence and confidence in working online? As an educator of nurses, I am compelled to consider the types of learning experiences to which my students are exposed and the effectiveness of these in preparing them to be the RNs of the future. My continuing dedication to providing students with vital and vigorous opportunities for learning has meant investigating contemporary research and emerging technologies, such as virtual worlds.

Essentially, in my experience, very little seems to have changed about the way nursing students undergo their education from when I undertook my BN in the initial days of the profession's move to higher education. So much has changed in society since my experience as an undergraduate, yet our pedagogical practices remain largely static. Technology is everywhere, yet in higher education institutions, is largely as a repository of information and not being fully utilised as a platform for active student learning.

I still remember the day that my perspective changed: no longer did I believe I was working in an organisation that was stifled and unappreciative of the changing times. I happened upon an introductory session describing a virtual world. The most passionate educator I had ever heard was talking about Second Life and all that it could be.

I began to think about how I could incorporate Second Life into my teaching. The possibilities of using this virtual world, to achieve my professional goals of enhancing opportunities for learning experiences and outcomes for nursing students, was an exciting prospect. Hence, the question: will the experience of learning in a virtual world help my students become nurses?

Keywords

Avatar, clinical practice, ecology of learning, education, educational technology, ethnography, experiential learning, focused ethnography, graduate nurse, higher education, immersive learning, inworld, learning, nursing, qualitative research, Second Life, simulation, technology, tertiary education, undergraduate nurse, university education, virtual simulation, virtual worlds.

Abstract

Ubiquitous internet access has given rise to increased use of educational technologies in higher education. Using a focused ethnographic approach, this thesis presents an understanding of the nature of learning in the online environment of Second Life (SL). Embedded within the conceptual framework of ecology of learning, the work required an interconnectedness with the multi-layered nature of becoming a nurse.

The research explores the nature of learning nursing skills in SL and the meaning assigned to it by practicing Registered Nurses, academics and nursing students. The relevance and transferability of the acquired knowledge and skills to contemporary nursing practice is also considered. Three undergraduate nursing courses utilised SL over a four-year period. Nursing skills were initially introduced during class time and then students were given unlimited rehearsal time in SL with feedback provided. Formative and summative assessments were also conducted in SL.

The research was qualitative. Semi-structured interviews were conducted along with participant observations, field notes and examination of relevant artefacts. Interviews were recorded, transcribed and coded. Patterns and arrays were constructed into emerging themes, themes and categories. All the data was analysed and reviewed in a cyclical manner.

This research has contributed significantly towards understanding the crucial role SL can play when learning to be a nurse. Many significant and unique findings about participant interactions in SL emerged. For example, SL enabled a scaffolded approach to learning across a Bachelor of Nursing program. Students developed strong reflective practices, and online peer relationships flourished in SL. It was also apparent that SL enhanced pre-existing, real-world relationships, which generated the growth of entirely new communities of learners. The virtual world enabled the sequential delivery of complex skills prior to the beginning of clinical placements and encouraged academics and learners to build stronger relationships. SL

was shown to successfully mimic real-world, experiential, learning environments while, at the same time, conferring feelings of 'safety' upon the virtual learners. In other evidence, it became clear that attention to one's self-created avatar had considerable impact upon the learning experience. Some participants were initially dubious about learning nursing skills in this virtual realm, and, finally, experiences in SL emerged as enjoyable.

A recommendation calls for nurse educators to adopt the use of virtual worlds for wider and consistent use in nursing curricula. Future investigation could address questions such as, 'Does idealised, personalisation of the avatar correlate with increased learning?' Nevertheless, this research demonstrates the vast, but largely untapped, potential for SL to span the gulf between nursing theory and practice.

Publications Arising from this Research

Peer reviewed manuscripts

Irwin, P., Coutts, R., & Graham, I. (2019). Looking good Sister! The use of a virtual world to develop nursing skills. In A. Naweed, L. Bowditch, & C. Sprick (Eds.). *Intersections in Simulation and Gaming: Disruption and Balance* (pp. 33-45). Singapore: Springer. https://doi.org/10.1007/978-981-32-9582-7_3

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Glossary of Terms

Avatar	A user generated digital representation of self-created for purposeful participation in a virtual world (Minocha & Hardy, 2016).
Avatar skin; skin	Textured graphical representation of the avatar that gives shape and colour
Bachelor of Nursing program	A three-year program of study recognised and accredited by the Australian Nursing and Midwifery Accreditation Council and approved as suitable preparation for entering the Nursing and Midwifery Board of Australia (NMBA) National Register of Practitioners (ANMAC, 2019b).
Clinical practice	A healthcare environment where students or staff observe or treat actual patients.
(EN) Conversion students	Students enrolled in an EN conversion program have already achieved the qualification of Enrolled Nurse. Completion of this condensed Bachelor of Nursing program qualify for listing on the Nursing and Midwifery Board of Australia National Register of Practitioners (ANMAC 2016).
Course	An educational block of organised study, sometimes called a unit, module or paper, often completed over an extended period at a higher education organisation. Successful completion of multiple courses leads to completion of a program and attainment of a qualification.

Enrolled Nurse	An Enrolled Nurse has successfully completed an education program of study accredited by the Australian Nursing and Midwifery Accreditation Council and approved by the Nursing and Midwifery Board of Australia. The Enrolled Nurse provides nursing care, working under the direction, delegation and supervision of the Registered Nurse (ANMAC 2016).
Experiential practice; clinical practicum	Refers to students participating in the observation or treatment of actual patients in a clinical setting.
Nursing graduate; graduate nurse(s), graduate(s)	A person who has successfully completed the requirements of a Bachelor of Nursing program and is employed as a Registered Nurse and may be in their first year of clinical practice.
Higher education	Formal study at university level (or similar) usually to a minimum of degree level.
Higher education academic; academic	A staff member of a higher education institution. For the purpose of this research all references to this term reflect a Registered Nurse who is now in employed in the education sector and not healthcare.
Inworld	Refers to being inside the virtual world of a massively multiplayer online role-playing environment.
Level B academic; lecturer; educator	A scholar employed at a university who has generally achieved a PhD and is responsible for the development and delivery of courses within a program.
Level C academic; senior lecturer; senior educator	A scholar and researcher, senior to a level B, who is a nationally recognised leader in a specific field.
Nursing discipline virtual lead	An academic employed at a higher education institute who is an expert in the development and delivery of course content using various virtual platforms.

Nursing student(s); undergraduate student(s); undergraduate nurse(s); student(s)	A student or students currently enrolled in an accredited program such as a Bachelor of Nursing.
Clinically practicing registered nurse; practicing nurse(s); nurse	A clinically practicing registered nurse who continues to work in a clinical environment and delivers patient care.
Program of study; program	A defined set of courses (see above) that collectively lead to the attainment of a qualification when completed.
Registered Nurse; nurse(s); practicing nurse(s)	A person who has completed the requirements of a Bachelor of Nursing and is currently listed on the Nursing and Midwifery Board of Australia National Register of Practitioners (ANMAC 2019b).
Second Life	A persistent 3-dimensional (3D) virtual world. Without having a specific objective, it is not referred to as a game. Users participate via an avatar that is capable of movement and communication via speech or text (Moscato & Altschuller, 2019).
Clinical simulation; simulation(s)	A teaching method that is used to replicate real-world clinical events (Gore & Thomson, 2016).
Virtual learning environment	VLE is any learning situation that uses technology or, more specifically, is reliant on the use of the internet for student participation (Girvan, 2018).
Virtual world	A predominantly internet-facilitated simulated environment, where users participate via an avatar (Minocha & Hardy, 2016). Virtual worlds can be used for recreation, fantasy, gaming and education.

List of Abbreviations

ALT	Adult learning theory
ANMAC	Australian Nursing and Midwifery Accreditation Council
BCE	Before the current era
BN	Bachelor of Nursing
ELT	Experiential learning theory
eMR	Electronic medical record
EN	Enrolled Nurse
ICN	International Council of Nurses
IT	Information technology
LMS	Learning management system
MKO	More knowledgeable other
MMORPG(s)	Massively multiplayer online role-playing game(s)
RN	Registered Nurse
SCU	Southern Cross University
SL	Second Life
SLE(s)	Simulated learning environment(s)
UTAUT & UTAUT2	Unified theory of acceptance and use of technology (updated to 2)
VLE(s)	Virtual learning environment(s)
VSLE(s)	Virtual simulated learning environment(s)
ZPD	Zone of proximal development

Statement of Original Authorship

The work contained in this thesis has not been previously submitted to meet requirements for an award at this or any other higher education institution. To the best of my knowledge and belief, the thesis contains no material previously published or written by another person except where due reference is made.

Signature:

Date: 19 March 2020

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Thank you to my extended family and friends, especially Dee, Nick and Sue, who have all learned about the requirements of a PhD and the fun of using virtual worlds. I am indebted to my brother Michael who shared his philosophical understandings with me and whose belief in my ability was unwavering. I am also especially grateful to Nicola, my friend with a critical eye who proofread my work, and was lovingly ruthless with her feedback. Tac and Megan, who arrived late in my journey, were nevertheless integral for me to achieve the completion of this work and for this, I am thankful.

With thanks to my colleagues Leeanne Whitehair and Martin Gadd who were early adopters and willing to work with me and championed the use of a virtual world in the nursing program. The participants, the students, the academics and the nurses—who all demonstrated a commitment to outstanding quality education for nurses and in doing so were willing to challenge the status quo also made the research possible.

Of course, this would not have come to fruition without the support and encouragement of my supervisory team, Rosanne Coutts, Iain Graham and initially Allan Ellis (who was part of my original supervisory team). Allan commissioned the first virtual build at Southern Cross University and introduced me to the possibilities of educational technology. Thank you to Iain for his passion for nursing, encouraging me to remember history and its place in the present.

Rosanne has been completely committed to being with me for the entirety of this undertaking. I have learned so much and am eternally grateful for her wisdom, guidance and unerring patience.

Chapter One: Introduction

1.1 Overview of the Research

Nurse education has the need and capacity to adopt technology to assist in the development of practice ready graduates who can meet the changing demands of healthcare. Simulated learning environments (SLEs) have been widely adopted in nursing curricula to help close the theory practice gap (Lee, Liang, Chu, & Hung, 2019). Western society's broad adoption of technology has infiltrated healthcare and education to a point where the relationships between educator and learner (Gallardo-Echenique, Bullen, & Marqués-Molías, 2016), and nurse and patient are evolving (Archibald & Barnard, 2018). This technological revolution has changed the way learners want to be educated and correspondingly, is inspiring nurse educators to potentiate alternative strategies to deliver course content (Irwin, Kraten, & Coutts, 2018).

This thesis describes the adoption of the virtual simulated learning environment, Second Life (SL) into an undergraduate nursing program. Spanning four years in a regional multi-campus higher education institution, the research explores undergraduate nurses, academics and registered nurses' experiences when interacting and learning in this environment. Guided by an ecological framework and within the conventions of focused ethnography, this research asks, 'What is the nature of learning in SL?' and extends to consider the relevance of learning nursing skills in this virtual platform and the transferability of the knowledge gained during simulations.

1.1.1 Justification for the research.

The increased implementation of technology in healthcare mirrors a similar rise in higher education. Virtual worlds such as SL have experienced a rapid growth in use due to increased bandwidth, user accessibility and Ghanbarzadeh and Ghapanchi (2018) also link this to "the depth of applicability and attractiveness of this technology" (p 370). Technology has often preceded the pedagogy (Savin-Baden et al., 2010).

Kukulaska-Hulme and Traxler (2013) also supported this and suggest that the "rapid technological and socio-cultural change is at odds with the more leisurely pace of evolving pedagogy especially the formal pedagogy within colleges and universities" (p. 246). Research is required to validate or challenge the underlying pedagogy of the use of these environments in higher education (Gregory, Lee, Dalgarno, & Tynan, 2016).

Nurse education in Australia has persistently failed to meet desired graduate outcomes since moving to higher education (Missen, McKenna, & Beauchamp, 2018). Graduates find themselves disillusioned when their anticipated educational outcomes do not readily translate and are inconsistent with actuality upon entering the clinical field. Julio et al. (2010) stated that these poorly prepared and shell-shocked graduates were the product of a clear "mismatch of professional competencies to patient and population priorities because of fragmentary, outdated, and static curricula producing ill-equipped graduates" (p. 8).

To improve graduate attributes, there is a pressing need to change both the content and mode of delivery of the Australian nursing curriculum to match technology's influence (Australian Commission on Safety and Quality in Health Care, 2013; Johnson et al., 2016). As such, this research intends to contribute to the discourse regarding the educational value of teaching and learning the skills of nursing in a virtual world and will extend to consider the nature of these experiences.

1.1.2 Purpose and scope of this research.

Being such an innovative and relatively unchartered modality, it is not surprising to discover a paucity of literature focused on SL and the education of nurses. With a focus on nurse education learning environments, the purpose of this study is to achieve an understanding of the efficacy of using a virtual world to teach aspects of clinical practice. Educators of nurses are continually challenged to source alternative learning opportunities in an effort to enhance the attributes of nursing graduates. SL may offer a link between theoretical content and actual clinical experiences.

Cognisant of an ecology of learning, the education of contemporary nurses requires interactions with clinical experiences, healthcare environments and higher education institutes, which, all contribute to the development of competent nurses. This research therefore, seeks to achieve the creation of research that dimensionally represents the voices of the participants. Within this scope, nurses, students and educators were considered for their ability to provide insight to add to our knowledge about learning in a technologically evolving world.

1.1.3 Physical location of the research.

The research was conducted at a regional tri-campus (A, B and C) higher education institution. Each campus delivered the Bachelor of Nursing (BN) program (accredited by the Australian Nursing and Midwifery Accreditation Council [ANMAC]) and one campus additionally delivered a conversion program (Diploma of Nursing to the BN). Institutional equity standards dictated that each campus received the same learning opportunities.

The BN delivered content across three years using a variety of teaching and learning methods. These included lectures, tutorials, simulations, clinical practicum and self-study.

Twenty-two courses in the 24-course program were delivered on-campus with two courses delivered completely online.

The conversion program (consisting of 16 courses) was established as a two-year program accredited by the ANMAC in 2015, whereby the first year was delivered at a residential school (three weeks total), with further online learning. Students joined the larger undergraduate cohort during the second (final) year of the program and merged with the largely on-campus course offerings.

Campus A, was in a regional coastal setting and was a collaborative education centre combining a higher education institution, a technical and further education institute (TAFE) and a government education and training department.

Campus B was situated in a rural setting in a large regional town. This campus was the initial site of the higher education institution and nursing has been delivered at this campus since 1985.

Campus C was situated in a metropolitan coastal area and was the most recently built campus. The conversion program was delivered at Campus C with the initial intake in 2015.

1.1.4 Virtual location of the research: Second Life.

The research was also conducted within the computer generated virtual world of Second Life (SL). Second Life (SL) is a virtual 3D platform that can mimic real-life as well as fantastical environments (Moscato & Altschuller, 2019). Inhabitants of this world are known as avatars.

An avatar represents users of the inworld environment and can be likened to a cartoon figure. The avatar is capable of movement (walking, sitting and flying), and has limited gestures. Communication between avatars is achieved through synchronous speech or text chat (typing) (Minocha & Hardy, 2016). An avatar can be humanoid or take on other figures

including living creatures (real or mystical) or objects (such as a cube). The avatar provides anonymity to the user as visual and naming conventions do not apply in SL (Triberti, Durosini, Aschieri, Villani, & Riva, 2017).

SL is divided into parcels of land referred to as islands and it is there that the owners can develop their worlds. It is possible to close islands to the public if the landowner desires to do. Various disciplines in higher education have utilised their virtual islands to deliver or assess content simulated in medical precincts (Irwin, Coutts, & Graham, 2019), schools (Gregory et al., 2017), and historic, rural and international venues (Gregory et al., 2015; Irwin, Coutts, & Kraten, 2018; Morgan, 2016; Moscato & Altschuller, 2019)

This research was conducted on three adjoining virtual land leases, operated by the higher education institution. Within this world they were situated on Interaction Island, Commerce Town and Education Island.

Interaction Island was a virtual representation of the main campus of the higher education institution. Figure 1 is a photograph that illustrates the main area of the courtyard, which was utilised as an informal meeting space for participating students. A library, boardroom, gymnasium, open lecture theatre and sporting grounds were also on this parcel of land. For the delivery of the BN, this area became a general virtual skill development area.

Commerce Town was a town centre that had a medical centre and an intensive care ward where students would complete course content. Also in this virtual space was a streetscape of various shops, a motel and an art gallery.

Education Island was utilised by one course within the BN program where students visited a virtual house situated on this land parcel to complete course requirements.

Figure 1. Interaction Island in SL showing the courtyard where students and staff would gather.

1.2 Conceptual Framework

1.2.1 Ecology of learning.

An ecology of learning is guiding this research. At its roots, the term 'ecology' is generally associated with the living world, and while it is appreciated that the individual systems within our physical ecology are generally viewed separately from the living world, like in ecology, their existence is dependent upon other systems (Siemens, 2005). In order to aid the understanding of the complexity of learning, Seely Brown (2000) likened an ecology of learning to that of a garden.

Like a garden that forms the 'world' for plant and animal interactions, learning would form the worldly construct, within which individual attributes, previous experience and teacher attributes are some of the interrelated and interdependent systems. Like a garden, the ecology of learning is diverse, with possibilities for creation and ultimate growth in the capacity for learning. Therefore, as a framework for this research, 'ecology of learning' gives shape and unique meaning to the process.

The ecology of learning as conceptualised by Bronfenbrenner (1976), places the learner in the centre of the microsystem, or the immediate, primary learning setting. The mesosystem comprises the major networks that the individual has associations. Essentially representing the broader systems that integrate the elements of the microsystem, incorporated here are interactions such as those between family, church, peer groups and the workplace.

Extending outward, thus indicating a broader and increasingly shared setting, the exosystem incorporates the formal and informal social structures that can both encompass and impinge upon the inner systems. It is important to note that the individual does not directly function in this system. The macrosystem represents the principal institutions of the culture. This sphere includes the social, economic, educational and political systems and represents

the dominant discourse of the individual's world. Finally, the chronosystem underscores the effect of time and intersects all systems (Bronfenbrenner, 1976).

To conduct authentic research, it is imperative to have a framework that can adjust to incorporate the breadth of possible contexts and resources (Ranieri & Giampaolo, 2019). For educational research, each setting could be considered as having learning systems containing different resources at various levels of proximity to the learner and the interactions and interdependencies of each differ in the respective system. How each individual interacts with and perceives these resources will shape their experience of learning and development (Jackson, 2016a).

This research is focused on the application of an educational technology where learning is facilitated. Barron (2006) describes technology as a context in an ecology of learning that breaks open a number of affordances for learning and presents unique trajectories where the learner can determine their own pathway through exploration and creativity. The ubiquity of technology realises the infinite learning possibilities for the student. Knowledge sits in a fluid state between consumption and construction, where learner and teacher vacillate between knowledge builder and consumer. The contemporary learner must critically discriminate as they explore their own virtual learning paths (Seely Brown, 2000).

1.2.2 Adaptation of an ecology of learning framework for this research.

The framework of Bronfenbrenner (1976) has been utilised for this research. Knowledge and expertise in the area were used to depict these five systems in the context of nursing. These systems are chronosystem, macrosystem, exosystem, mesosystem and microsystem. Each aspect of the framework has been given a contextual aspect in relation to this research.

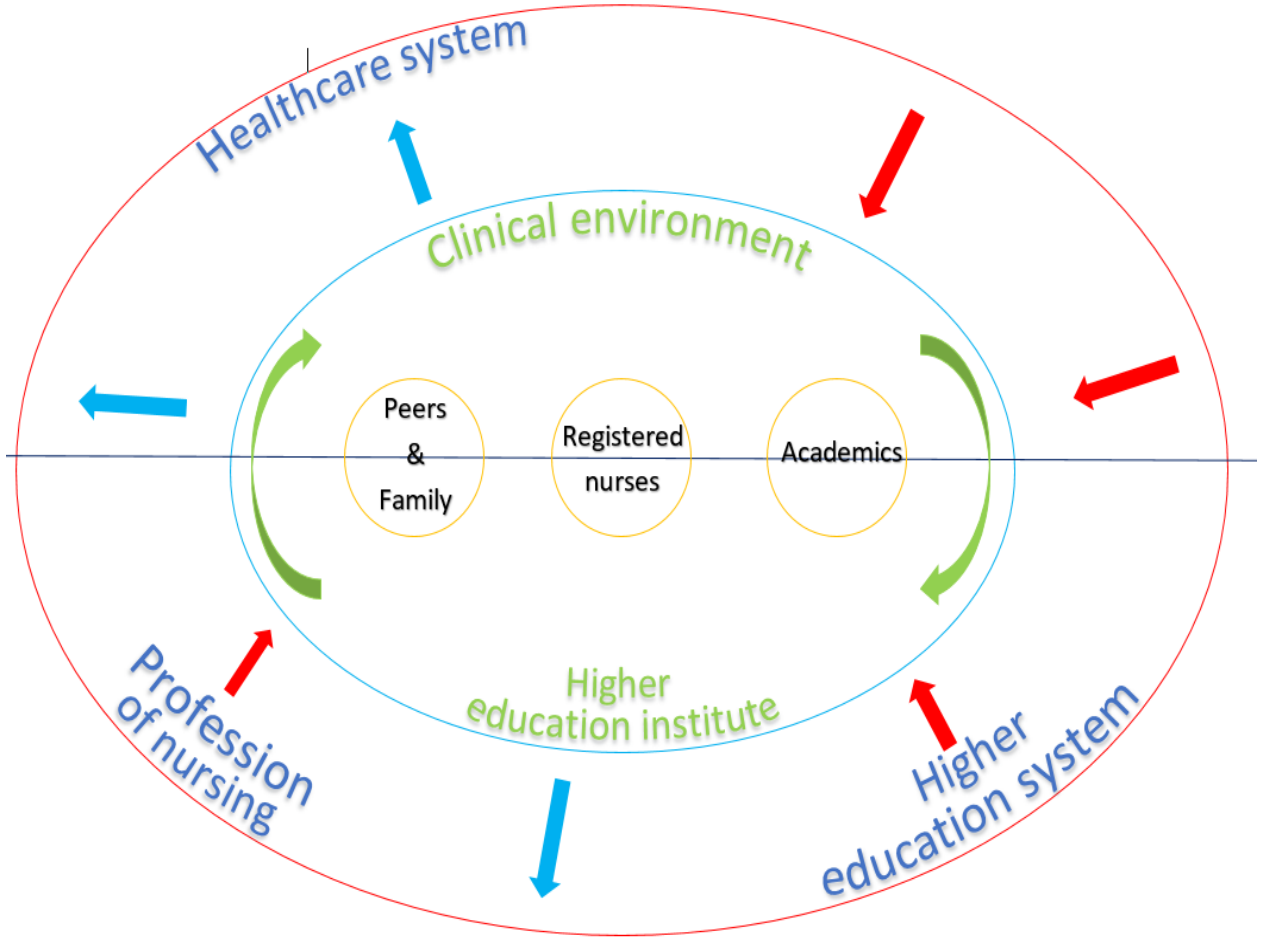
The broad influence of the chronosystem is represented as a cross-sectional line. Intersecting all systems, this line reflects the impact of time contextually. This includes individual learner growth, both physical and psychological, altered system networks and developments within the wider systems that can influence learning experience.

The encompassing macrosystem houses the widest social, economic and political structures that relate to learning and specifically the nursing education focus of this research. As such, depicted are drivers that determine healthcare delivery including workforce and education, as well as the social and professional status of nursing.

Learning to be a nurse occurs within two essential contexts: the higher education system and the healthcare environment. These formal constructs are represented in the exosystem and are acknowledged to not directly interact with the learner, however, their influence can directly impact learning. As such, education and nursing literature are explored in later chapters to enhance understanding of the exosystem, the context of the contemporary undergraduate student and nursing program.

The mesosystem represents settings where the exosystem can influence the experience of the learner. This occurs in the higher education institution and the clinical placement environments; the contexts where learning to be a nurse occurs. It makes sense, therefore, that the mesosystem also represents the settings where those who are identified within the

microsystem associate. Academics, RNs and peers have primary and intimate contact with the learner. These notably interact in these environments, where their position within the ecology of learning enables them to provide their unique perspectives to the microsystem. The importance of knowing about the experiences of these people within these systems was a driver for this research.



Chronosystem:

- Theories of learning
- Education of nurses
- Trust in technology, growth in use

Macrosystem:

- Healthcare and education for all
- Nursing as a profession within the healthcare context.

Exosystem:

- Higher education organisations
- Healthcare system

Mesosystem**:** Explore multiple connections.

- Student nurse on clinical placement
- Academics clinical currency
- RNs involvement with curricula

Microsystem:

- Individual learner,
- Academics,
- Family & peers,
- Registered Nurse

Figure 2. The five systems of the ecology of learning framework guiding this research project.

1.3 Research Question, Methodology and Limitations

1.3.1 Development of the research question.

The research question arose from a thorough grounding in epistemology and knowledge of the concrete processes of teaching and learning from both contemporary and historical literature, with a particular focus on nursing. Until recently, nursing skills have been taught in a clinical environment. The move to the higher education setting provides opportunities to utilise pedagogical approaches that challenge the tested 'see one- do one' methods, and encourage critical thinking.

Research literature that jointly considered the concepts of knowledge and technology in the context of higher education was reviewed. Because technology has been seen to change social participation—from the way, we interact with friends and conduct business, to the way we teach and learn, the research enquiry was refined to focus on nursing education, knowledge construction and technology. Research that was specific to the education of nurses and the use of technology, specifically that focused on utilising virtual worlds was lacking.

Therefore, with a focus on nursing education, the question for this research is: What is the nature of learning in SL? The rationale for using the somewhat nebulous keyword 'nature' was intentional. This enabled the researcher to broadly pursue an understanding of 'learning' that was not prescriptive or beholden to accepted definitions. Learning to be a nurse in a virtual world is a new phenomenon and as such, the researcher was open to diverging from traditional understandings of teaching and learning. Therefore, the research sought to understand the experience of educators who interact with students in this virtual realm and the meaning assigned to the experience by the students. The relevance and transferability of the virtually-acquired nursing knowledge and skills to contemporary nursing was also considered

as part of this research. It was important to understand if this approach to teaching and learning nursing was applicable to the profession's delivery of healthcare.

1.3.2 Overview of the research methodology.

This research adopted a qualitative approach. Qualitative research is ideal for exploring a new concept and aids in building understanding by focussing on the *how* and *why* of a phenomenon (Sullivan & Sargeant, 2011). Typically, qualitative research is contextual where the researcher interacts with study participants in their natural setting and seeks and values individual perspectives (Denzin & Lincoln, 2005).This is enabled by incorporating subjective approaches such as observation and interviews using open-ended questioning techniques (Sullivan & Sargeant).

The researcher was intent on describing, interpreting and constructing new knowledge from the perspectives of the participants and as such, the research was conducted from an interpretivst philosophy (Saunders, Lewis & Thornhill, 2019). Unlike a positivist philosophy, that promotes one observable truth, interpretivism seeks to unravel the complex, rich, socially constructed, subjective realities of a phenomenon. Further, Crotty (1998) submits that language, history and culture inform the world view from an interpretivist perspective.

Woodgate (2000, p.194) confirms that all qualitative approaches "share a similar goal in that they seek to arrive at an understanding of a particular phenomenon from the perspective of those experiencing the phenomenon." As such, a number of methodologies were considered within the context of the research question and context.

For example, action research was initially considered. The idea of participatory research was appealing to the researcher and the cyclical nature of curriculum delivery, seemed to be in accord with this approach. However, it did not meet the needs of the research question, as at its core, action research seeks to solve a social problem, or to "change practice in the here

and now" (Kemmis & McTaggart, 2005, p.564) and places less importance on historical, cultural and individual perspectives.

In order to promote understanding from an individual perspective, phenomenology was considered. It has as its primary focus, the lived experience of the participants and is also considered a valuable research approach in nursing (Streubert & Carpenter, 20011). It was determined however, that the shared lived experience of the participants would not fully capture what the researcher was anticipating. That is, positioning the lived experiences of the participants within their culture and from an historical and contextual perspective. It was also important for the researcher, that the methodology chosen would acknowledge the etic perspectives of the researcher.

Therefore, this research adheres to accepted conventions of focused ethnography (Higginbottom, Pillay & Boadu, 2013, Muecke, 1994), in that the investigation is content specific and has a limited number of participants, all of whom hold specific content knowledge. The setting for this research is typical of focused ethnography (Knoblauch, 2005) as it concentrates on a small 'field' of the researcher's own society and seeks to understand the social activities and motivations of the individuals in this environment.

A focused ethnographic approach enables the deep exploration of an explicit social phenomenon in everyday life (Cruz & Higginbottom, 2013). The phenomenon being explored in this research is the act of learning the skills and knowledge of nursing during interactions in a virtual world. The researcher contextualises and gives meaning to the data that was collected by gathering relevant artefacts, performing observations, and conducting interviews with academics, RNs and nursing students.

As a pivotal convention of focused ethnography methodology, a biography of the researcher has been provided and relevant experiences are conveyed. The researcher's shared personal ecology of learning, which became explicit and fully developed during the research

process, is expressed as Brewer (2000) would recommend in reflective writing pieces throughout the thesis.

1.3.3 Limitations.

From initial planning through to dissemination, despite a commitment to rigorous methodology, bias can occur during any stage of a research project (Pannucci & Wilkins, 2010; Yin, 2016). Interviewer-bias as described by Yin, can be a significant potential threat. Guarding against the pervasion of the entrenched knowing and the preconceived ideas of the researcher was a priority. From the inception of this research project, vigorous and thorough self-reflection, along with broader examination of the researcher's methodological tools for potential sites of bias was undertaken.

Davies (1999) also cautioned that researcher overindulgence in self-exploration may be seen as a limitation in research. As is recommended by Polit and Beck (2014), to enhance cultural neutrality, assumptions or preconceived notions were held in abeyance so that researcher observations were made unencumbered by existing assumptions. These bracketed assumptions were journaled and frequently discussed with the co-researchers to assist in minimising this limitation. Researcher initiated measures such as this served to decrease bias, and, along with triangulation of data, were completed to reduce the potential of bias from purposive sampling.

I commenced this research with considerable knowledge about the various circumstances of the participants, and as such, I have sought to embed rigour and transparency in the design. In this, I have been guided by Maxwell's (2009) identified strategies for combating threats to validity (pp. 244-245). The research was conducted over a four year period (intensive long-term field involvement), during which time data was collected from multiple sources (rich data), and where appropriate feedback from participants was obtained (respondent validation) and compared (triangulation).

1.4 Summary

The coalescence of nursing, education and technology creates opportunities for nurse educators to alter curriculum development and delivery to better meet the needs of their students, graduates and the health workforce. This qualitative research is timely and explores the utilisation of the virtual world of SL, for the delivery of nursing courses. An ecology of learning, the conceptual framework for this research serves as the linking structure that guides the researcher's literary consultation and gives shape to the structure of the research.

Researcher reflection. Nebulous terms.

No matter whether an educational program is an innovative course using cutting-edge technology or a traditional, teacher-centred lecture, it is imperative to consider the relationship between learner and educator and how knowledge is created. That is, is this relationship a synergistic interaction where knowledge is a shared construction or is the knowledge merely imparted as if existing in a concentration gradient and simply moving towards its lowest concentration? When does the learning occur?

So that I could claim some legitimacy as an educational researcher, exploring such issues of knowledge generation or development with courses using Second Life (SL), I utterly immersed myself in educational literature at the outset of this journey. I concede now that I underestimated the enormity of the foundational material I would have to cover and perhaps even more of a challenge, the elementary questions I would have to ask myself. For example: What does it mean for my students to really know something? Despite my certitude as a teacher, how do I know that my students know? Is recall, knowing? Or is knowledge only validated through its application? If I hold fast to my professional identity as a teacher of nurses, surely, I should understand how it is that students come to gain the knowledge and be able to address the whole raft of variables that impact this learning.

Chapter Two: Exploration of the Educational Literature

2.1 Introduction

Of the five levels of the ecology of learning framework, the outer macrosystem and chronosystem, acknowledge the influence of historical events and prevailing social and pedagogical paradigms (Bronfenbrenner, 1976). For example, the way nurses have previously learned their practice in the hospital setting gives insight into previous ideologies. Learning was far less reflective of the dynamism and creativity of an ecology and more akin to the immutability of a pillar of stone (Altschul, 1987). Further to this, nurses were taught to approach this rigid indoctrination, of essentially psychomotor skills, with devotion and blind faith.

Does the change in the teaching approach utilised for nurses equate to an enforced altered style of learning for students or have educators now a clearer understanding of what knowledge is, how to better educate their students and aid in learning process? Do cohorts in different disciplines learn in the same way? Does the use of technology influence and therefore have an impact on learning?

2.1.1 Gaining knowledge.

According to Pritchard (2014), epistemology is the philosophical inquiry into the concept of knowledge and the nature and extent of knowing where answers to questions such as: how we know what we know; how it can be justified; how much can we know, are sought. Indeed a unified understanding of the concept of knowledge escapes the philosophical world

although definitions of types of knowledge such as propositional knowledge, ability knowledge and performative knowledge are described (Pritchard).

To the ancient philosophers, with goals of living a life that was purposeful and good, knowledge was inextricably aligned with morals and ethics and personal and focused reflections (Gutek, 2011; Lao-Tzu, 2011; Tehie, 2006). Socrates (469–399 BCE) is described in Book VII of '*The Republic'* as being on a path to discover the meaning of knowledge through philosophical analysis and debate, believing that the exercise of 'knowing oneself' would expose concealed falsities and lead to goodness (Plato, trans Bloom. 1968).

The idealism of a knowledgeable person embodying goodness is also found in the eastern philosophy of Taoism (Lao-Tzu, 2011). This is described as the seeking of knowledge (getting back to the source) and is recognised not as cumulative but as an exchange. "In the pursuit of knowledge, every day something is added in the practice of the Tao, every day something is dropped" (Lao-Tzu, 2011, p. 48).

The idea of 'dropping' something is in contrast with the fast paced technology driven western world of today where consumers of communication technologies can be charged with having too much information although lacking knowledge. For example, the unprecedented access to online health information, colloquially referred to as consulting with 'Dr Google', has created a new health phenomenon referred to as cyberchondria, resulting from consumers not being able to discern irrelevant information from pertinent knowledge (Starcevic & Aboujaoude, 2015).

The concept of knowledge can be considered alongside an understanding of the mind or our relationship to what we think. For example, when Descartes, considered the father of modern philosophy, pronounced in the 17th century that, "I think therefore I am" (Descartes, trans Maclean, 2006, p. 73), he did not justify knowledge but used knowledge to justify his existence. He linked the action of thinking to that of his very being. Descartes' attempt to establish this simple, fundamental truth about existence has been debated by philosophers in

the ensuing centuries. Tolle (2005), for example, holds that because the mind is dominant (always thinking) the essence of achieving enlightenment or being, is intangible until the thinking mind can be switched off.

In his writings such as the '*Meno'* (80d-86c) and '*Phaedo'* (72e-76d), the rationalist views of Plato (427–347 BCE) present the mind as being actively involved in the attainment of knowledge and where he described knowledge as innate (Plato, trans Lamb, 1967). Plato furthers this concept and adds that at pre-birth we are souls who have all the knowledge of humanness and once born, the knowledge becomes lost to the chaos of living.

Aristotle (384-322 BCE), who was largely considered an Empiricist with rationalist tendencies, explained in '*de Anima'*, that he believed that when born, the human mind was *tabula rasa* and that it was the influence of sensual experiences on the mind that created knowledge (Aristotle, trans Barnes, 1984). The ancient philosopher believed that the mind actively considered external stimuli to discover meaning and knowledge. Pojman (2004) asserted that the ability to reflect and examine in this way shows that Aristotle believed that the mind did indeed have some innate characteristics such as active reasoning; however, the emphasis of his philosophy rested in empirical assumptions.

Aristotle's way of understanding knowledge laid the foundation for many of the modern philosophers (Gutek, 2011), such as Locke, who in the 17th century promoted Aristotle's view; adding that complex ideas came from combining simple notions. In the 19th century Mill furthered this again presenting the contemporary, popular understanding that a complex idea could often represent something very different from the original simple notion (cited in Gutek). That is, the whole idea is different from the sum of its parts (Hergenhahn & Olson, 2005). As stated by McMillan, Stanga, & Van Sell (2018), this is a foundational concept for many contemporary nursing theories.

Gutek (2011) describes Kant in the 18th century, as also supporting the existence of innate concepts in the same way that Plato acknowledged that sensory experiences could

initiate finding or recalling innate, pre-existing knowledge. Blending of these rational and empirically based notions is evidenced when considering the Confucian epistemological foundations as described in '*The Doctrine of The Mean', (*Chapter 20) where it is believed that wisdom could be attained via three ways, through: a fundamental desire to learn; seeking knowledge to solve a problem or; innate mechanisms.

2.1.2 'Getting' an education.

> . . . the fundamental issue is not of new versus old education nor of progressive against traditional education but a question of what anything whatever must be to be worthy of the name education. . . . What we want and need is education pure and simple, and we shall make surer and faster progress when we devote ourselves to finding out just what education is and what conditions have to be satisfied in order that education may be a reality and not a name or slogan (Dewey, 1938, p. 90-91).

We associate the idea of education with formal institutions and textbooks; a compulsory process begun in our formative years and, ideally, culminating in some form of higher education. Dewey's desire for "education pure and simple*"* in the opening quote is appealing; a simple equation is that an education begets knowledge. Education, it would seem however, is another difficult concept to define. Despite a robust exposure from formative years to adulthood, if ten people were asked to define education, undoubtedly ten different definitions would be espoused.

Augustine (354-430 BCE) believed that teaching was about imparting knowledge and believed that no man can teach knowledge, or more specifically, that no man can make another *have* understanding (Augustine, trans Wills, 2001). Of course, we come to a state of understanding (of *possessing* knowledge) ourselves, our world and those around us without the confines of a classroom or the instruction of a teacher. This research attempts to understand the nature of learning in a virtual world: What can I do as a teacher, to enhance the

learning outcomes for the students? Aligned with Dewey's postulations: What conditions do I need to create or satisfy to make education a reality?

Tailoring teaching strategies toward accommodating differences between diverse learners (acknowledged by ancient philosophers) has not always been prioritised, nor indeed recognised. Confucian philosophy advocated altering what was taught but not a different teaching style (Confucius, trans Lau, 1979). Confucius, for example, held that people were born to a role within society and were part of formed *relationships* and this status quo was to be maintained and therefore the content of lessons were melded to the role to which each learner was born (Confucius, trans Lau, 1979).

Augustine proposed that students who came to be educated brought with them their own unique background and life experience (Augustine, trans Wills, 2001). He reasoned that each educational plan then must differ for each learner. In keeping with his pedagogy, he divided his students (*audience)* into those who had a sophisticated education and those who were from an impoverished genealogy and therefore had a less liberal instruction. Whilst the end point in education was the same, the manner in which it was delivered by Augustine differed depending on who the learner was—"although we owe the same love to all, we should not treat all with the same remedy" (Augustine, trans Canning, 2004, p. 8).

Reflective of the earlier works of Augustine, Dewey (1938) wrote that "amid all the uncertainties there is one permanent frame of reference: namely, the organic, connection between education and personal experience" (p. 25). Contemporary adult pedagogy courses are often designed to reflect an understanding of the life experiences and prior learning of each student and to consider the impact of these upon their learning.

2.1.3 What is learning?

In contrast to the previous exploration of the concepts of knowledge and education, ideas about learning are more robust and reconciled. Definitions have become increasingly

more focused since Washburne's work in the early 20th century, who claimed that "learning is an increase, through experience, of problem solving abilities" (1936, p 610).

Lachman (1997) presented a more contemporary understanding of the experience of learning describing it *as* "…a relatively permanent change in behaviour as a result of practice or experience." (p 479). This definition builds on the notions espoused by Washburne (1963) by introducing the components of behavioural change and the importance of continued practice.

The definition from Lachman (1997) however suggests that learning is behaviour-based, and excludes any new information that can be learned without the necessity of altered behaviours. Additionally, the terms 'experience' and 'practice' are vague. How much and what type of experience and practice is required that will meet the requirements of learning? Is virtual experience and practice included in this definition of learning?

In his '*De Memoria Et Reminiscentia',* Aristotle proposed a number of critical associations by which a student learns. Referred to as the 'Laws of Association', Aristotle presented that in order for the mind to be able to store and recall new information content should be similar, contrasting, contiguous or frequently presented. Indeed, "not a single learning theory propounded in this century has failed to base its account on the associative principles" (Weimer, 1973, p. 8).

Whilst a consistent understanding how students learn now prevails, contemporary learning theories reflect shifts in prevailing paradigms and as such, some differ in their prescriptions to the teacher and the way they encourage student knowledge growth. For example, Canning (2004) acknowledged Augustine for suggesting that an educator should not be given praise for giving someone new knowledge for teaching. Further to this, Augustine viewed it was the student who had done all of the work and so deserved the credit for learning. The student after all, must internalise new knowledge and reconcile this content with his own personal truth (Augustine, trans Wills, 2001).

While there is merit in crediting the student in such a primary way, not simply for what they have learned but for the effort involved in doing so, this view does not account for the teacher who inspires the student, motivates them and gives them a new lens through which to see the world. Contemporary higher education, where a humanist paradigm prevails, bears witness to a shift in the teacher-student relationship where a learner-centred methodology has emerged replacing the traditional, product model curricula (Hase & Kenyon, 2000). This contemporary educational style is preceded by, and loosely aligned with Taoist philosophy where:

> the ancient masters didn't try to educate the people but kindly taught them not to know. When they think that they know the answers, people are difficult to guide. When they know that they don't know, people can find their own way (Lao-Tzu, 2011, ch. 65).

The internet has created an information-rich environment where student 'texperts' (experts using technology) have opened the door to a global classroom and academics facilitate learning (Hart, 2017). The challenge for contemporary educators has shifted to discern the most meaningful way to assist students to decipher and differentiate the plethora of information.

Researcher reflection. Treading water in the tides of change.

I attended a symposium of teaching and learning recently where 'champions' within the field were asked to give accounts of their recent teaching experiences. The educators were elevated to their new status due to recent teaching scores demonstrating high student satisfaction. They all spoke about an 'exciting and innovative' alteration in their practice. For example, one spoke about a move from an essay to a reflective journal as an assessment. Another spoke about using Facebook as a method to deliver content.

At the time, thinking about the presented ideas and similar changes within the nursing courses I was teaching, positioned alongside courses where no other alterations had occurred, made me realise that the notion of learner-centred education is an aspiration in higher education that we have yet to accomplish. Siloed learning still dominates many students' experiences, with lectures given by PowerPoint sometimes lasting for hours, prescribed readings from set texts and individual assessment tasks that could be considered as gaining only superficial outcomes.

While the educational theories of humanism and constructivism have been written about glowingly in nursing literature for over 40 years, it became apparent as I sat there listening to the speakers, that the use of these are a reality only in pockets of higher education. I am perplexed that an 'establishment' such as higher education, staffed with forward thinking professionals, who are all abreast of contemporary educational theories, persist with practices that are more closely aligned with the teacher–centred paradigm of yesteryear.

I have worked with educators who do step out of this haze of habit or complacency to challenge themselves and their students with an altered teaching or assessment method. Colleagues champion them as innovators, however, if the change is perceived as difficult or increases student workload, staff are often criticised by the learner cohort. This then affects

student satisfaction for the course as a whole and the weight of negative student feedback is every bit as influential as educational best practice.

A similar problem extends to use of technology where often, like some 'traditional' assessments, its adoption is limited to when usability is assured for educator and student alike. As educators, we are encouraged to utilise technology but, in my experience, we seem to be stuck in the delivery truck mindset of technology use in education. The acronym learning management system (LMS) should perhaps be changed to 'learner meals on wheels' (LMW) where content is delivered and digested with little effort (or thought).

We know so much about our contemporary students and how they prefer to learn and what enhances their learning. I just do not understand why we persist with irrelevant, outdated teaching methods. I understand the enormous pressure my colleagues face in developing new resources and the time associated, because I face it too. I understand the enormity of the task in trying to engage students in a meaningful way however if we do nothing, if we persist with uninspiring, unsupported teaching methods, what sort of nurses will we be producing?

2.2 Contemporary Learning Theories

Theories of learning, particularly in the 20th and 21st centuries, have undergone a slow transformation from relying solely on didactic teaching methods to promoting learners who deduct and construct their own knowledge in environments that are flexible and conducive to learning (Kolb & Kolb, 2009; Yoder & Terhorst, 2012). From essentially a psychomotor or tactile phenomenon, to the recognition of learning as a social, behavioural, affective activity, theorists continue to debate the multifaceted nature of the concept of learning. Behaviourism, humanism, cognitivism and constructivism are considered as foundational theories of contemporary education.

2.2.1 Behaviourism.

Behaviourism was formally established in 1913 with the work of Watson who associated learning with objective, observable events and behaviour that could be measured (Watson, 1930). Behaviourism sought to disassociate from the immeasurable and subjective, shifting away from a functionalist paradigm, where behaviours are considered in conjunction with conscious thoughts, environmental influences and previous experiences. Instead, it is based on empiricism where the external, behaviour, is primary and so learning is something that can be materially manifested, observed and measured (Rathus, 1985). Ertmer and Newby (2013) stated that if one were to examine learning with a behaviourist methodology, there would be no need to complicate data and analysis with attention to motivations, cogitation or psychological musings—all behavioural change is rigidly induced by an obvious, discernible *stimulus-response* interaction.

Aspects of behaviourism are still applied to modern classrooms typically in competency-based training models of education (Amstutz, 1999). As such, it is used in many disciplines including educational technology where computer assisted (or aided) instruction

and learning management systems (LMSs) are prevalent. These systems provide an opportunity for learners to affirm skills through reinforcement, as they are capable of offering learners online repetitive drills and closed ended tutorials (Cooper, 1993; Hung, 2001). An example of this is an online quiz. Students move through questions and can receive immediate feedback regarding their performance however are not given further learning material to develop their learning.

While there is widespread adoption of these virtual instruments, the content delivered through these could be considered as narrow and restricted. The superficial, repetitive style of learning (Hung, 2001) and often valueless extrinsic reward system inherent to these instructive tools, means that learners typically lose focus and can become quickly disengaged (Dede, 2008). Additionally, behaviourism is said to fail to account for altered subjective behaviour nor does it allow for incidental learning or individual characteristics and it assumes that all learning can be planned and measured objectively (Tennant, McMullen, & Kaczynski, 2009). Palinscar (1998) asserted that it was not possible to examine higher order skills such as deep learning and rational, critical understanding via behaviourist methodologies.

Nursing has been historically associated with a behaviourist approach to teaching and learning where clinical skills were honed through repetitious drills, and were conceptualised as essentially the acquisition of new behaviours or overt actions such that the process of learning is outcome driven (Lavoie et al., 2018). While this form of rote learning still has its place for developing foundational skills and dealing with factual content, Palinscar (1998) stated that this approach does not enhance flexibility or the critical thinking ability a nurse requires to determine alternative actions when they are inevitably presented with the same skill in different contexts.

2.2.2 Humanism.

The development of humanism in the1960s was a paradigm shift away from the teacher-centred learning of behaviourism towards a learner-centred focus. From a humanist standpoint, the absolute, authoritative role of teacher dissolves into that of 'facilitator' and learners are encouraged to take responsibility for their own learning (Tennant et al., 2009). Essentially humanists advocate empathy and belief in the possibilities inherent in being human (Rogers, 1961). Individuals are seen to learn through intentionality and view. This holistic approach values cognitive and emotional facets of self as equally important as behaviour (Tennant et al.).

According to the facilitated-educational model, humanism influences and promotes that the foundational knowledge of the learner has primacy over the teacher's expertise. Learning within this framework is viewed as a partnership between the teacher and the learner, which creates a kind of mutual authority so that students also have a hand in shaping a curriculum through, shared past experiences (Trotter, 2006).

Rogers contended that learning was as natural as breathing such that the motivation to learn is intrinsic and learning precipitates changes not only in behaviour but also in attitude and personality (Rogers, 1961). Indeed, the psychological changes were the most significant and lasting outcome of the entire experience. Therefore, Rogers asserts that regardless of extrinsic evaluation, a learner will intrinsically know the meaning and success of the learning experience.

Interestingly, the humanistic values of Rogers were aligned with, and extended to consider patient-centred approaches to nursing care. One of the most important principles of this approach was to provide a particular type of relationship where, "the other person [the patient] will discover within himself [or herself] the capacity to use that relationship for growth, and change and personal development will occur" (Rogers, 1961, p. 33).

The humanist ideology shapes learning (or patient care) as an interpersonal exchange where learners (or patients) achieve personal growth and exit with skills that bolster problem solving, lifelong and self-directed learning skills (Huitt & Hummell, 2003). Archibald and Barnard (2018, p 2476) acknowledged that the use of technology could challenge caring within a humanist paradigm due the potential "objectification and rationalisation of the human experience".

Seeded by humanist ideals, Knowles's theory of andragogy or Adult Learning Theory (ALT) was founded on the notion that motivated adults were eminently capable of self-directed learning (Knowles et al., 2015; Trotter, 2006). Key assumptions of ALT are that, as learners, adults are internally motivated and self-directed, able to build on previous life experiences, goal oriented, relevancy oriented, practical, and appreciate being respected (Knowles et al., 2015).

In his attempt to reconceptualise learning, the concept of andragogy by Knowles intentionally dissociates from the traditional, behaviourist, scientific model of understanding childhood learning—pedagogy. Just as Brown (1994) argued against behaviourism using de-contextualised animal experiments to theorise about a child's learning, according to Merriam (2001) Knowles challenged the application of childhood learning theories to adult learning.

Although ALT has contributed significantly towards our understanding of adult education, limitations have been identified. For example, while it is a reasonable assumption that the successful negotiation of a wealth of life experiences, equates to an adult learner's capacity for independent, self-directed learning, ALT fails to consider adults who are learning foreign content, which is utterly misaligned with previous learning and requires skills that are considered as alien to their life experience (Merriam, 2001).

Because of the potential for not acknowledging the needs of certain learners, Knowles et al. (2015) recommended that educators employed judgment in applying andragogical or pedagogical ideologies within their classrooms. For example, when a learner is in a dependent

learning exchange, as is the case when an adult confronts unfamiliar content, a pedagogical approach is appropriate although Knowles insists that in this framework the learner will always be dependent. In contrast, when working within an andragogical model, the learner and the teacher are working towards the shared goal of independence (Knowles et al.).

2.2.3 Cognitivism.

In an effort to 'make meaning,' cognitive theories of learning emerged in the 1960s where cognition was interpreted with consideration to processing and organisation of information and reasoning (Gange 1985). As stated by Brown (1994), while still acknowledging the importance of motivating learners through reinforcement and critical feedback, cognitivists essentially focus on changes in behaviour being attributed to self-determination and decision making. Individuals are considered able to actively construct knowledge rather than just be a passive recipient. The focus was upon the 'thought processes' which underlie and govern observable changes in learning behaviour (Brown).

The antithesis of behaviourism then where the mind is considered an impenetrable *black box*, cognitivism views behavioural changes as a manifestation of mental processes, which can be observed and defined as schema (Murtonen, Gruber, & Lehtinen, 2017, p116). Learning is defined, therefore not by changes in behaviour but by changes in an individual's schemata (Ertmer & Newby, 2013), and according to Harasim (2017), learning processes are markedly influenced by the short, long and working memory.

Within the theory of cognitivism, the human mind is viewed as not having predetermined actions (Ertmer & Newby, 2013). In fact the mind is often compared to a computer program where information is entered (an event), processed (cognition) and an outcome is generated (altered behaviour). Seeking explanation of complex learning such as reasoning and problem solving are encompassed within this theoretical perspective (Ertmer & Newby).

Offering a bridge between behaviourism and cognitivism the theory of social cognitivism attributes learning to cognitive, behavioural *and* environmental influences (Bandura, 1989). Social cognitivists believe that for learning to occur there needs to be both internal and external determinants (unlike behaviourism, which focuses upon external stimuli alone). According to Wulfert (2013), one of the core beliefs of social cognitivism is that learning is attained through intrinsic determinants such as motivation, thoughts, expectations and beliefs and while some of these factors, such as motivations, may be generated externally, they are ultimately internalised and thus become self-regulated.

Social cognitivists purport that behaviour is learned via observational activities of modelling, shaping and cueing and support the notion that learning does not necessarily equate to a change in individual behaviour (Cubas, Rodrigues da Costa, Malucelli, Nichiata, & Santos Enembreck, 2015). These learning processes or activities are heightened when a learner has attributes that are: (1) being attentive; (2) being able to retain the information; (3) being able to reproduce the information; and (4) the individual needs to be motivated to learn (Hergenhahn and Olson, 2005). The consideration of the impact of individual characteristics such as attentiveness and motivation as well as the prevailing social influences align Bandura's social learning theory with constructivism.

2.2.4 Constructivism.

Constructivist theory has dual perspectives and is typically divided into cognitive and social constructivism (Atherton, 2013). These theories examine the construction of knowledge from an individual and social perspective respectively and are dominant epistemologies that emerged within higher education (Atherton, 2013; Hung, 2001). Emerging from the work of Piaget and Bruner (Bruner, 1960; cited in Ertmer & Newby, 2013; Piaget, 1972), constructivist theorists purport that learning occurs through the discovery of knowledge which is contextualised and given meaning by the learner's previous experiences; thus it is

constructed, rather than instructed (Knowles et al., 2015; Shiratuddin & Hajnal, 2011). Interestingly, constructivism intertwines both a rationalist view of learning, where the mind gives meaning to the world, and an empiricist view, where experience is the key to learning (Schunk, 1991).

Constructivism supports the notion that multiple interpretations of the world are possible (Ertmer & Newby, 2013). The dominant tenet of Piaget's theory (cognitive constructivism) is that learning is active and occurs by building on previous experiences though the processes of assimilation and accommodation (Piaget, 1972). According to Atherton (2013), the work of Vygotsky diverged from Piaget primarily because of the importance placed on social interactions and their impact on cognitive development.

Where cognitive constructivists attributed the learning process to mental schemas, social constructivism emphasises the dialogues enacted in the social context and their primacy to all learning experience (Shiratuddin & Hajnal, 2011). According to Atherton (2013), a core premise of Vygotsky's theory is that social learning *precedes* development. Through this lens, children are seen to use cultural tools such as speech and writing to communicate needs and then, as these tools become internalised, higher order learning becomes possible.

Despite its widespread adoption, constructivism is debated. Clark (2009), for example, cautions that whilst the theoretical underpinnings of a constructivist paradigm are widely accepted, it is difficult (if not impossible) to put this theory into practice. Legg, Aldeman, and Levitt (2009) agree and argued that just because a learner's ability to construct knowledge is based on prior experiences, this should not translate into teaching methods that leave learners struggling over complex problems in poorly directed groups.

Clarke (2009) also contended that constructivism rarely equated to a successful teaching method (apart from with gifted students). This is because at the time of its inception, the mapping of human cognition (particularly short and long-term memory) was not fully

understood and as such, problem based or minimally guided learning was considered conceivable (Kirschner, Sweller, & Clark, 2006).

Vygotsky developed the concept of the Zone of Proximal Development (ZPD), which is an area where personal development and potential can be realised through social and cultural interactions (Vygotsky, 1997). Pea interpreted the ZPD as being *"*the zone of activity in which a person can produce with assistance what they cannot produce alone (or can only produce with difficulty)" (Pea, 2004, p. 426).

Within their own ZPD, learning occurs more readily in collaborative interactions, where a student learns with the help of a more knowledgeable other (MKO) such as a teacher, a peer or even a computer (Atherton, 2013; Hung, 2001). The concept of an MKO further supports the social aspect of learning and challenges Clarke's discussion about the practical application of social constructivism as it suggests that learning may be a much more diverse and a less formalised experience (Pea, 2004).

Vygotsky built further upon the notion of a ZPD (Vygotsky, 1997) as he sought to understand childhood development and utilisation of speech through the concept of 'scaffolding', which is essentially the support provided to a learner (Pea, 2004). Instructional scaffolding is an approach in which a variety of supports are given to the learner by an MKO (be it through techniques such as modelling, as in an apprenticeship model, or through the provision feedback) and is targeted specifically to required content knowledge within the individual's ZPD (Pea).

Scaffolding continues to be a strategy used in contemporary education. Research undertaken by Salmon, Nie, and Edirisingha (2010) further advances its application to educational technology. This evolved into a five-step model of scaffolding which gives direction to educators designing and delivering content in asynchronous and asynchronous online environments.

The stages of the model predict movement of a student from their: initial admission into an online program; socialisation with peers; ability to exchange information; ability to construct knowledge; and demonstrate critical thinking and reflection (Salmon et al.). The benefits of the model includes: increased communication between teachers and students as well as flexibility of access, the transmission of quality content and the support of lifelong learning (Haigh, 2004). Central foci such as flexibility and lifelong learning overlap with core principles of humanistic learning theories (Huitt & Hummell, 2003).

2.3 Learning Theories for the Digital Nurse

The higher education landscape has shifted to where technology's presence is inspiring educators to rethink how to deliver programs. Educators have an opportunity to merge previous educational pedagogies with contemporary ones as the education environment is redefined. For example, connectivism is a novel approach to teaching and learning within a technologically dominant educational space (Siemens, 2005) but this theory can be complementary to the more entrenched theories of humanism and constructivism (Bell, 2011). Because of this influence, connectivism recognises the interactions between learning resources as well as prior learning, lifelong learning and collaborative learning, which are not diminished but enhanced by the use of technology (Siemens, 2005).

Generational diversity amongst the educator and learner cohorts mandate that a change is required in the way knowledge is transmitted and importantly, it is not just one method that is useful in guiding students to success. The use of experiential learning for example, dominates nursing education (Shin et al., 2019) however; an increased access to knowledge via technology creates an opportunity to provide access to content that is authentic and relevant to the education of nurses. The use of frameworks such as the unified theory of acceptance and use of technology 2 (UAUT2) can help to develop greater understanding of the specific elements that enhance student engagement and motivation to learn using technology.

2.3.1 Experiential learning.

Kolb's experiential learning theory (ELT) (Kolb, 1984) features in adult learning theory literature and is regarded as being crucial to an understanding of adult learning (Kolb & Kolb, 2009) and in turn informs contemporary nurse education (Shin et al., 2019; Andreou, Papastavrou, & Merkouris, 2014). ELT holds that learning is transformative. That is, learning

is an iterative process where knowledge is constructed through experience and within a purposeful reflective process (Kolb, 1984).

This theory promotes a learner-centred approach, and it seeks to actively engage the learner by placing them at the centre of the learning cycle (Bergsteiner, Avery, & Neumann, 2010). Further to this, the approach builds upon the work of Dewey, Lewin and Piaget and considers the combined effects of cognition, emotion and the environment on learning. Active reflection, a feature of ELT lends itself particularly well to contemporary nursing education where students are required to reflect upon their theoretical learning and clinical practice in an 'experiential' setting (Laschinger, 1990).

According to Kolb (1984), experiential learning is cyclical and achieved through the successful engagement with four competencies, which are: (1) accommodating; (2) diverging; (3) conveying; and (4) assimilating. Kolb defined two ways of grasping experience; through concrete approaches or through abstract conceptualisation. Concrete represents the actual participation in the experience, whereas abstract is the cognitive action, which takes place outside of the event and is enacted (following a reflective stage) to help make sense of what has been experienced or observed.

In addition, Kolb described reflective observation and active experimentation as the two ways in which concrete experience is transformed into knowledge. A continuum exists between experiencing (concrete experience) and thinking (abstract conceptualisation) so that the dialectic modes of watching (reflective observation) and doing (active experimentation) are shown to be orthogonal pairings along an inner continuum along which individuals and their preferred learning styles are situated (Kolb, 1984). According to the model, repeated exposure to a learning event allows most people to develop proficiency in a particular learning competency and, in this way, an individual's learning style is actualised (Kolb).

Accommodator learners prefer 'hands on' experiences (concrete experience/active experimentation) whereas divergent learners are good at seeing concrete situations from multiple points of view and they thrive on group discussions and brainstorming sessions (concrete experience/reflective observation). Convergent learners tend to be able to problem solve practical situations (abstract conceptualisation/active experimentation), whilst learners deemed to be assimilators can organise and make logical sense of large amounts of information and prefer lectures, one-to-one instruction and self-instruction strategies (abstract conceptualisation/reflective observation). Imperative to understanding Kolb's (1984) ideas is the notion that learning styles are not representative of fixed traits. The very nature of the dialectic continuums negates the predictability of stasis (Kolb & Kolb, 2005a).

For nursing students undertaking clinical practice (concrete experience), these provide the basis for purposeful reflection (reflective observation). From this, conclusions are drawn and cohered into meaningful conceptualisations (abstract concepts). This assimilated knowledge is then tested through active experimentation, for example when next in the clinical environment or in a simulated learning environment (Lee et al., 2019). The application of this cycle to virtual 'practical' experiences has not been documented.

In later years, the four learning styles associated with learning competencies expanded to nine in order to capture the potential blending of different learning styles. (Kolb & Kolb, 2005a). These styles have a strong association with the ELT cycle, and a learner's preference can be identified through use of a learning style inventory (Kolb & Kolb, 2005a, 2009). Learners still complete the entire cycle despite divergences in styles, however particular steps within the cycle are more suited to some learners and afford a deeper learning outcome (Kolb, 1984). No learning style is seen as superior to another; it is an intricate understanding of the individual styles that provides privileged knowledge for the educator, and indeed the learner.

Kolb and Kolb (2005b) identified that professionals in the human sciences such as nurses are attuned to concrete learning; accommodating and divergent learning. More recent

studies conducted by Lee et al., (2019), Vizeshfar and Torabizadeh (2018), Gonzales et al. (2017); Tutticci, Coyer, Lewis, and Ryan (2016), Çelik, Ceylantekin, and Kiliç (2017) and McCrow, Yevchak, and Lewis (2014) align with Kolb's (1984) initial work. Simulation as a teaching strategy is growing in popularity in higher education particularly in the health professions (Nehring & Lashley, 2009) which according to previously mentioned research, meets the concrete learning styles of those enrolled in nursing programs.

Researchers have noted that individuals can develop variations in their preferred learning styles even across the span of their studies. These differences have been attributed to learning spaces that engender confidence in all learning styles (Fleming, McKee, & Huntley-Moore, 2011; Kolb & Kolb, 2005a). The provision of diverse learning spaces in higher education helps to develop learners so that they are better prepared for the complex workplaces that await them (Kolb & Kolb).

Learning spaces. Kolb and Kolb (2005a) identified the principles required to create an effective, experiential learning space. These foundational precepts characterise the learner as a dependent and interdependent agent, and situate them within their immediate surroundings and the wider social environment. With acknowledged influences from Bronfenbrenner's human ecology (1976) and Vygotsky and Lewin's 'life space' theory of development and learning, the learning space concept by Kolb and Kolb can map the interrelated nature of learning at an individual level.

A learner's attributes position them within a certain 'learning space'. Awareness of this position provides direction for educators to develop and deliver content. In a similar way that this research acknowledges the importance of gaining an understanding of a student's individual ecology of learning, and it is suggested that in achieving the principles espoused by Kolb and Kolb, (2005a), educators must be attuned to the philosophical foundations of the experiential learning space.

Indeed, given the expectations of contemporary learners in higher education, who demand a learner-centred experience; integral to the pedagogical discourse are: the concepts of being more flexible (Derboven, Geerts, & De Grooff, 2017), learning as a blended modality (McDonald & Spence, 2016) and the utilisation of virtual learning spaces (Stephens, Dewing, Brown, Middleton, & Neville, 2016). While experiential learning continues to be relevant in nursing education, the concurrent burgeoning of communication and information technologies has meant that consideration be given to emerging learning theories that accommodate the ubiquity of the internet and the altered profile of the adult learner.

2.3.2 Connectivism.

Siemens (2005, p. 5) asserted, "technology has reorganised how we live, how we communicate and how we learn." As such, the concept of connectivism derives from his resolve to address the entrenched inconsistencies in the application of existing learning theories to contemporary, adult education (Siemens; Bell, 2011). Whilst still valuable, the impact of technology upon the traditional relationship between learner and educator has exposed the limitations in established learning theories such as behaviourism, cognitivism and constructivism (Clarà & Barberà, 2013; Siemens, 2005).

Advances in technology has created a shift in the accessibility of 'e-learning' from a 'one-to-many' connection (the lecturer to many students) to multi-directional connections. Siemens (2005) acknowledged these connections stating that there is now "value on the external environment in which knowledge is filtered and transferred as opposed to how it is internalised by the learner" (p5).

Undoubtedly, the top-down lecturer to students approach still exists though is now superseded by the multidirectional connections between each individual student user and the mass of other users connecting via the World Wide Web (Kop, 2011). This understanding of a dynamic and interconnected learning environment is attuned to an ecology of learning

(Jackson, 2016b) where the multidirectional, dynamic interconnected systems of an individual's ecology can influence experiences of learning.

Connectivism advocates that learning occurs within a connected, learner-centric paradigm such that educators need to transition from functioning as a 'broadcast medium' to an 'interactive medium' (O'Neil & Carr, 2008). This idea of 'interaction' extends beyond "share, participate, collaborate" to incorporate "immersive co-creation" (Bulu, 2012, p. 154). The role of the educator in a connectivist learning environment is altered in line with the learner-centredness of the theory. Unlike the traditional 'chalk and talk', a facilitator working within a connectivist framework would 'guide from the side' (Yoder & Terhorst, 2012). This altered educator *presence* has evolved because of the need for increased self-directed learning.

In order for the exploration of knowledge-connections to be a fruitful undertaking, connectivism accentuates the need for active learner engagement so that perceptive, considered search strategies are more likely to result in siphoned information and new knowledge. Essentially knowing 'where' to get information supersedes knowing 'how' and knowing 'what' (Siemens, 2005). Once the 'where' is established, the strength of the knowledge, the 'what', and the potential for continued learning rests upon the diversity of opinions found in the community of users and the maintaining of veracity and cogency within the connections (Bell, 2011). Undoubtedly, if all users shared the same viewpoint, there would be little value in the undertaking.

Siemens (2005) suggested that the pedagogical tenet of connectivism is the connectedness between learners and the way in which information flows. Information technology offers users access to potentially infinite amounts of information and ideas; some of it extremely valuable and others of dubious quality, accuracy, reliability or credibility. For this reason, developing the integral meta-skill of judiciously evaluating this material is a crucial part of the learning process in itself.

Developing the critical literacy required to sift, analyse and systematise masses of information is an essential prerequisite for effective learning (Siemens, 2005). Clarà and Barberà (2013) agreed adding that analysing the surfeit of information available to the learner via the World Wide Web is an arduous task, even for those with highly developed critical literacy skills. Those without these skills are left directionless.

O'Neil and Carr (2008) identified a generational divide in the ability to use technology for the sourcing of information, stating that modern, connected learners (digital natives) process information differently when compared with their less technologically adept generational counterparts. As such, they can be shown to be more assured and possessing confident perspectives about how to manage learning content. O'Neil and Carr go on to state that these learners, these digital natives, "know that they cannot know everything and that when they need to know it, they will be able to find it ... and just in time" (p 4).

Kop, Hélène, and Mak (2011) suggested that connected learners are those that use search engines such as Google and Bing or subscribe to a rich site summary feed. Employing strategies such as Advanced Search options to assist in refining a search for the most specific and salient information, Kop et al. have cautioned that learners could be steered towards information with a veiled bias, such that the learner in an informal knowledge-gathering environment, needs to be aware of these external influences and develop skills for prudent selection.

There is an ease of transition between formal and informal learning in a framework based on connectivism (Kop, 2011). For this potentiality to add value, adult learners need to be intrinsically motivated, have confidence and an ability to initiate learning. However, the inherent skew towards informal learning and the high dependence on technology within a connectivist paradigm means that those students who are not comfortable in the learning environment may feel disenfranchised and marginalised (Clarà & Barberà, 2013; Kop).

Further to this, Kop states, to achieve heightened levels of intrinsic motivation and therefore engagement, the user needs to feel a *presence* or belonging.

Presence. The concept of the learner's 'presence' is the subjective experience of being *in* an environment, regardless of physical location (Kop, 2011) and can include social, co-presence and cognitive presence (Bulu, 2012; Tirado Morueta, Maraver López, Hernando Gómez, & Harris, 2016; Yang, Quadir, Chen, & Miao, 2016). Social presence refers to the way in which the communication media can influence relationships through intimacy and immediacy. In the context of learning, comprehensive, individualised and timely feedback engenders social presence (Zhan & Mei, 2013).

Where presence in general refers to *being in*, social presence refers to *being with,* co-presence refers to the relationship potential at a psychological level. Co-presence in technology can be equated with interactions between peers where both are committed to a demeanour, which is approachable, available, and accountable (Bulu, 2012). In their study, Tirado Morueta et al. (2016) categorised social presence by demonstrated online affective, interactive and cohesive behaviours. They observed that online learners demonstrated high levels of social activity and cohesion when given structured tasks by educators.

2.3.3 Acceptance and the use of technology.

Via the amalgamation of eight pre-existing user acceptance models, Venkatesh, Morris, Davis, and Davis (2003) developed the original Unified Theory of Acceptance and Use of Technology (UTAUT). Four significant constructs were identified that were strongly associated with a user's acceptance of technology (Venkatesh et al.). These were performance expectancy, effort expectancy, social influence and facilitating conditions.

Venkatsh et al. (2003) describe each of these. Performance expectancy is the degree to which a learner believes the technology will help them learn. Effort expectancy is the difficulty or ease they perceive in using the technology. Social influence is the learner's

perception that important or influential 'others' (such as peers or teachers) believe they should use the technology. Facilitating conditions refers to the user's belief that supportive resources are available to them.

With its sole application to organisational contexts and to reflect how the uptake of technology was changing the way we work and learn, the initial UTAUT was extended to the UTAUT2 (Venkatesh, Thong, & Xu, 2012). Engaging an altered focus, the latest iteration has sought to broaden the scope of understanding about the consumer's use of technology with the addition of three new constructs: hedonic motivation, price value, and experience—habit (Venkatesh et al., 2012).

Venkatesh et al., (2012) define each of these. Hedonic motivation is described as the amount of enjoyment the user derives from the technology, where price value refers to the monetary cost of the technology. Clearly, user acceptance is high when the price value of the technology is lower than the perceived value to the learner. Experience and habit are viewed as distinct, yet related, constructs that influence user acceptance. Further to this, an important consideration is the impact of hedonic motivation and habit on behavioural intention as potentially moderated by age, gender and experience.

The elements of the UTAUT2 aids the understanding about specific drivers that can steer student engagement with educational technology. These enable virtual learning activities to be designed in a manner that promotes high user uptake and ongoing engagement (Venkatesh et al., 2012). For example, if a technology is difficult to use, or the student does not associate its use with benefit, the uptake will be limited. The unified theory of acceptance and use of technology 2 (UTAUT2) takes into account the voice of the user of the technology Ultimately an understanding of the specific constructs that influence a learner's acceptance of the virtual learning environment (VLE), impacts the design of the spaces and ultimately the nature of learning itself.

2.4 Summary.

This chapter has offered an exploration of the concepts of knowledge, education and learning. Wrestling with the sharing and creation of knowledge through education and learning are not new concepts and as this dialogue reveals contemporary ideas such as reflective learning, learner-centred education and the importance of prior learning have been founded upon the elemental ideas of ancient philosophers.

The evolution of theory sits in the changing landscape of adult education where there is an impetus to develop new knowledge about learning that is responsive to complex, contemporary conditions. Behaviourism, humanism, cognitivism and constructivism remain relevant to education. As applied to this research, each provides a foundation that will support an understanding of the value and nature of learning within the context of nursing education, where practical experiences and the use of digital technologies are purported as key components.

Researcher reflection. We all want to see change—or do we?

Education and health institutions are aware of the need to produce nurses who are 'knowledge nurses'; who are thinkers, capable of genuine patient advocacy and who are forthright change-makers. There is some sort of stagnancy or inertia, which thwarts this sort of change. When reading our most recent curricula I noted the prominence of discussion about the need for undergraduate nurses to learn leadership and management skills as well critical thinking and possess developed collaborative working styles. I read these references with a cynicism and my colleagues shared this frustration because the inclusion of that sort of content into a curriculum does not mean that we are producing graduates in which these attributes glowingly manifest. Writing it does not make it so.

It's not just higher education that has an unfulfilled mandate here; the health sector contributes to this disheartening sense of static dormancy. While changes in social circumstances and population health influence the intended profile of nursing graduates, there are those in the healthcare setting who are disinterested and even openly resistant to changing the way student learning is accommodated in their environment.

I have been privy, on many occasions, to conversations between RNs where they openly bemoan the standard of nursing students. They repeatedly complain that graduates are incapable of leading, making decisions or working collaboratively. Yet, when undergraduates are placed in these facilities for a learning experience, they are inducted into the old apprenticeship model of nurse training and are relegated to menial tasks. Often they are not given the opportunity (repeated or otherwise) to even try to develop these higher order skills. It has really given me pause to acknowledge and admire those students who survive the transition from student to RN.

I must admit that, as pessimistic as it seems, on the most despairing days I wonder if the health sector really does want a work force full of forward-thinking leaders. Perhaps a profession of RNs who will challenge the status quo is a threatening, potentially destabilising and even expensive prospect. Perhaps this is why the educational reform of nurses has only been supported from an inactive distance.

Chapter Three: The Exploration of the Profession of Nursing and Education

3.1 Introduction

Historical accounts across Europe, the United States and Australia reflect similar patterns where, the nursing curriculum is shaped by social and political events (Salmond & Echevarria, 2017; Willis, Reynolds, & Keleher, 2009). Commensurate with an ecology of learning; an understanding of local constructs and their influence is paramount (Bronfenbrenner, 1976). As Gutek (2011, p. 37) stated, "Existing educational institutions and arrangements reflect the belief system and values of the dominant political, social, and economic group or class that benefits from maintaining the status quo". For example, Nightingale certainly influenced the drive for formalised training globally and registration of nurses (Parker, 2010) and now the baton has been passed to contemporary nurses who must consider what has influenced what nurses learn and why.

In the modern era, the discipline of nursing has struggled to attain legitimatisation (Spitzer & Perrenoud, 2006). Nursing is now seen as a globally spread autonomous profession, where the education of nurses is conducted in higher education organisations (World Health Organisation, 2009). The transition from hospital-based training has not been an easy one and indeed some would argue it has not been successful in terms of graduate work-readiness (Edward, Ousey, Playle, & Giandinoto, 2017; Missen et al., 2018; Missen et al., 2016). Concerns now extend to consider whether nursing education goes beyond filling labour requirements to actually meeting patient needs and improving outcomes (Brown & Crookes, 2016).

3.1.1 A brief history of nursing education in Australia.

The evolution of formal nursing in Australia has been well documented (Greham, 2004; Stevens, 2003; Walker & Holmes, 2008). During early settlement, nurses were 'doers not thinkers' in public hospitals that "were places of confinement and suffering rather than healing and curing" (Stevens, p. 21). Stevens described the colonial years where the terms 'healthcare' and 'welfare' were misnomers for a system in which 'survival of the fittest' was a more apt description. Nursing was seen as a lowly paid vocation for "ignorant, incompetent and dangerous women" (Greham, p. 192). Female criminals served their sentence of punishment working in the hospital alongside men who were not capable of physical labour due to advanced age, disability or infirmity. These untrained workers took direction from surgeons or medical officers with tasks being largely domestic in nature.

In the wake of the post Crimean war, Nightingale's School of Nursing at St Thomas became the training model for many Schools of Nursing both in Britain and her global territories (Parker, 2010). In the 19th century, nursing was viewed as a vocation suitable for educated women and the rise in standing continued when Lucy Osburn (a Nightingale trained nurse) immigrated to Australia to establish the first Australian School of Nursing at Sydney Hospital (Francis, 2001). The Irish Catholic Sisters of Charity, who are credited with opening St Vincent's Hospital in Sydney (1857), were at the same time as Nightingale, offering nursing care through a commitment to providing for basic human needs (Miller, 1969).

Florence Nightingale instituted many reforms in the education of nurses, even within the rigid patriarchal restrictions of highly stratified, Victorian England (Welch, 2011). Nightingale sought to emancipate women from the stifling oppression of family duties and allow them financial independence through a vocation. However, a paradox still surrounds her legacy.

Even though Nightingale "sought to free women from the bonds of familial demands, in her nursing model she rebound them in a new context" (Reverby, 1987, p 43). It is also argued that she successfully rejected medicine's persuasion to oversee nurses and their education stating this would be the work of a matron (Willets, 2015). Further to this, Nightingale did devise a division of labour of sorts amongst the nurses; such that the educated nurses were the leaders and those of lesser knowledge became the workers—a staff mix still used today in acute care settings (Willets).

Global nursing curricula have seen shifts from acute care focus, linked to the building booms post World War II, to a community nursing focus. This was related to social welfare legislation, such as, the Community Mental Health Act (1963) and more recently influenced by The Affordable Care Act (2010) in the United States (Salmond & Echevarria, 2017). The implementation of the Social Security Act in 1965 saw an increase in hospital bed occupancy and the same occurred in Australia after the introduction of Medicare (1984) (Willis et al., 2009). In turn, this increase in bed occupancy necessitated a shift back to acute care nursing, as the central focus in nursing curricula.

Australia's healthcare system is facing a number of challenges that are likely to be relevant for the ensuing decades. For example, an aging population that is more likely to suffer from the ills of chronicity, means that nurse education should focus on primary health intervention rather than acute care (Patterson & Smith, 2015).

3.1.2 The move to higher education.

During the mid-1980s, in the pursuit of an independent, self-regulating status, nurse education began a profound, cultural shift away from a vocational, apprenticeship model and towards the professionalisation of nursing (Australian Department of Health, 2013; Willets, 2015). In effect, this was the culmination of decades of agitation by peak nursing bodies that rejected the "anti-educational, anti-intellectual", approach to the recruitment and training of

nurses espoused by medical practitioners (Altschul, 1987, p. 11). Nurses themselves had come to recognise that they needed, and deserved, to comprehensively study the theory underpinning their practice and not just the practice itself (El Haddad et al., 2016).

It had become increasingly apparent that there was no rational justification for the enormous disparity between undergraduate nurses and novices in other healthcare disciplines. While nurses trained in an apprenticeship model, where hospitals essentially exploited them for their labour, their peers in allied health were able to 'learn' under the relatively protected status of a student (Department of Education, Training and Youth Affairs, 2001). Nurse education moved away from its traditional, historical heart—the hospital—and turned towards education in the tertiary sector, with the aim of achieving their long sought-after recognition as an equal member of the healthcare team.

The relocation of nursing students from hospital training to the higher education sector to complete a Bachelor of Nursing (BN) addressed these issues, however created a different set of concerns that continue to be debated (Mirza, Manankil-Rankin, Prentice, Hagerman, & Draenos, 2019; Missen et al., 2018; El Haddad et al., 2016; Forber, Di Giacomo, Davidson, Carter, & Jackson, 2015). One of the most crucial areas of deliberation in nursing research is the quality, or otherwise, of nursing graduates (Mirza et al., 2019; El Haddad et al., 2016; Patterson, Boyd, & Mnatzaganian, 2017). There is a generally held concern within the profession, that the provision of high quality and consistent, practical education is difficult, if not impossible, for higher education to achieve (Griffin, McLeod, Francis, & Brown, 2016). Indeed Griffin et al. (2016) argued that contemporary BN students "have not been sufficiently prepared for the workplace culture, including the demands of the clinical practice" (p. 323). Novice nurses themselves have reported feeling sorely unprepared for the rigours of the clinical environment and an estimated fifty percent of them leave nursing employment after their first year (Parker, Giles, Lantry, & McMillan, 2014).

Hospital-trained nurses had a surfeit of practice as they earned their livelihood in a system that provided them with insubstantial theory (Sax, 1978). According to Monaghan (2015), contemporary nurse education suffers from the opposite imbalance where nursing programs do not adequately prepare students for the realities of the clinical environment, resulting in graduates who are not instantly ready for the demands, and increasing complexity, of the healthcare system. El Haddad et al. (2016) argued that producing a workforce of nursing graduates who could 'hit the ground running' was never an expectation of the shift to higher education. With intentions of the creation of a thinking workforce that was committed to lifelong learning, it would seem the move was at odds with social discourse.

Researcher reflection. Surely, they can't be serious.

Perhaps, as a profession, we have simply never come to terms with the idea of an imperfect graduate who consolidates their learning once working in the clinical arena, or perhaps we have simply not yet struck the right balance. Is the idea of a work-ready graduate a reasonable expectation? Surely, it is not conceivable that an entirely altered, education model would produce the same, clinically adept graduate, who learned vocational skills in the place of work, who is now expected to, not only hit-the-ground-running but also, possess an extensive theoretical grounding.

3.1.3 The contemporary nurse.

As is apparent from the previous dialogue, context has a great impact on the content delivered within nursing education (Salmond & Echevarria, 2017). This influence extends to include the ways in which the information is delivered and where it is delivered. Reflecting back to the days of Florence Nightingale and the education afforded to the women in these training hospitals demonstrates this point well. Nightingale's training of nurses was didactic and basic in the harsh hierarchical environment of wartime acute hospitals (Parker, 2010). This training certainly was not founded upon systematised, best practice evidence: nor did it extend to critical thinking and reflective practice (McMillan & Dwyer, 1989).

Moreover, the aged stereotype of nurses, as the *doctor's hand maiden,* bears scrutiny as a nurse traditionally provided for a patient's hygiene needs, attended to wound care and administered medications ordered by the Medical Officer. At a glance, the uninitiated could be forgiven for thinking that little has changed. Medicine still dominates the health system and has an unprecedented influence on health policy (Germov, 2015; Russell, 1990).

The physical and philosophical move to the neutral territory of higher education did not resolve the longstanding dissonance between nursing and the prevailing medical model (Balanon-Bocato, 2018). The dominant medical model still undermines the quest of nursing for self-determined, research-based practice. Or, at least, nurses still acquiesce to their perceived role in this oppressive paradigm. The psycho-social dynamics of this workplace interaction are beyond the scope of this research but so called, *"*submissive aggressive syndrome*"* (p. 1) which is often attributed to nurses and nursing, may have some relevance to the point of the discussion (Balanon-Bocato).

The move to higher education has seen a shift in the perception of professionalism and with this, an increased accountability (Happell & Cutcliffe, 2011). Education and healthcare have an interdependent relationship (Julio et al., 2010). The supply and demand of the health

labour market influences the establishment of graduate learning outcomes by the higher education institution. There is of course a lag between the identification of social healthcare needs and the graduation of practice-ready healthcare practitioners. Nursing curricula in higher education is designed as a perpetual five-year cycle (Australian Nursing and Midwifery Accreditation Council [ANMAC], 2019a). Its conceptualisation and preparation however, is accomplished in the preceding two years (Shanthi & Angelilne, 2015). This therefore necessitates curriculum developers to predict the needs of the health workforce at least seven years in advance. A shortfall between the education of nurses and the needs of society is therefore understandable.

Patient care and the development of clinical skills have, and continue to be, a common focus of nursing education (ANMAC, 2019b; Shanthi & Angelilne, 2015). With the move to higher education, an enduring source of debate is the balance of theory and practice (Missen et al., 2018). Given the seemingly ever expanding scope of practice for the contemporary nurse, it is of little wonder that the dialogue continues. The International Council of Nurses (ICN) has proffered a definition of nursing. The Council describes nursing as a profession that:

> . . . encompasses autonomous and collaborative care of individuals of all ages, families, groups and communities, sick or well and in all settings. Nursing includes the promotion of health, prevention of illness, and the care of ill, disabled and dying people. Advocacy, promotion of a safe environment, research, participation in shaping health policy and in patient and health systems management, and education are also key nursing roles. (International Council of Nurses, 2002, p. 1).

Whilst not explicit, this definition demonstrates a clear shift away from the importance of clinical skills to higher order thinking. Aristotle described that “there is an understanding that knowledge and understanding belong to art rather than experience, and we suppose artists to be wiser than men of experience…..because artists know the cause but the latter do not”

(Aristotle, trans Ross & Smith, 1908). His ruminations essentially provided the underpinnings of the contemporary healthcare system initiated by Nightingale where educated nurses remain well-positioned to accommodate the notion of being the artist with knowledge. Lesser-qualified (educated) caregivers, as Aristotle would have it, are seen then as the workers. Nurses have moved beyond being 'doers' to "acquiring, analysing, synthesising and applying evidence to guide practice decisions" (Finkelman & Kenner, 2013, p. 57). The modern nurse is a knowledge nurse.

3.1.4 The work of nursing: The Australian context.

Australia-wide trends are having an impact upon the nursing workforce and the role of the Registered Nurse (RN). Benner, Stutphen, Leonard, and Day (2010) describe escalating expectations of graduate nurses. These are perceived as essential graduate skills and include organisational management, expert clinical reasoning and a capacity for collaborative patient care. Further to this, even though innovation and advances in healthcare technologies alleviate certain stressors, they demand an ever-broadening skill-set that fundamentally changes the way RNs and patients interact (Keast, 2016).

Adding to the pressures on RNs in the workforce is a complex, ageing patient profile requiring equally complex healthcare (Harrison, Henderson, Miller, & Britt, 2016). According to Harrison et al. (2016), "a significant number of Australians not only have multimorbidity but have complex multimorbidity" (p. 243). High patient acuity and complexity has coincided with the retirement age of Baby Boomers, resulting in a global shortage of health-workers (Buchan, Duffield, & Jordan, 2015; Nancarrow, 2015).

The shortage of nurses, in particular, is a concern. Initially, the shift to higher education depleted nursing staff numbers because, of course, the translocation took with it a captive, student workforce from the employ of hospitals (Nancarrow, Moran, & Graham, 2014). The combination of the aging, transient workforce along with changes to nurse education has

resulted in an expertise-gap within a fiscally-challenged, increasingly complex healthcare system where undergraduate and post-graduate nurses are learning from inexperienced staff (Waters, Rochester, & McMillan, 2012). Increasing pressures upon healthcare facilities with intentional changes in staff mixes (reduced RN employment related to limited funding) has meant clinical placements for students are harder to broker and once there, students are no longer guaranteed to be mentored by senior staff (Roberts, Kaak, & Rolley, 2019). Students may often learn their clinical skills from a far less experienced Enrolled Nurse (EN).

This possible unsuitable mentorship of novice nurses is but one of a number of problems the profession faces in producing suitably able, thriving graduates. A number of researchers reported that expert nurses perceived that nurse graduates would have poorly developed skills in the areas of professional comportment, leadership and critical thinking (Julio et al., 2010; Lima, Newall, Kinney, Jordan, & Hamilton, 2014). Of more concern were the continued perceived deficits in nursing graduates during and beyond transition. It was reasoned that an absence of leadership presence at ward level accentuated gaps in the socialisation of graduates and their retention to the profession (Parker et al., 2014). The high exodus rates of newly graduated RNs in both Australia and the United States have been, in part, attributed to a poor professional identity (Madsen, McAllister, Godden, Greenhill, & Reed, 2009).

Researcher reflection. Keep driving—we are not there yet.

Today, nursing students essentially begin the consolidation of their education in their graduate year, once they are subsumed into the clinical culture of their choosing. I'm not saying that as educators, mandated with their formative education, we don't have an enormous contribution to make towards their success as RNs. Still, the unrealistic and standardised assumptions about what a graduating nurse is capable of sets students up for failure, compromises their socialisation into their profession and disappoints everyone. Nonetheless, their clinical practice hours must be at a premium and we certainly want to ensure that the clinical exposure they do have during their program is of the most constructive, challenging and supportive kind.

I feel it is essential that we understand this point—the efficacy of the new graduate will not be changed simply by increasing the amount of clinical exposure if we cannot assure its quality. If our move away from the shackles of hospital employment and the role of the doctor's handmaiden has done anything, surely it has given us the opportunity to produce, not more RNs like those who exist, but the RN we envision for the future. This is why cries of *They don't have enough clinical experience!* doesn't ring true for me. They don't need more time in the clinical environment or to have the ratio shifted away from theory in favour of practice. No. What our students do need is a particular type of clinical practice, which reflects our philosophy, our research base and our projection of who we want them to be in the future.

One could be excused for thinking that the acceptance of nursing as a profession is piecemeal. The stereotype of the caring, nurturing, passive nurse still seems to hang over us like a pall so that we struggle to be accepted as an equal participant in the healthcare team who is able to make decisions and institute research-based interventions regarding patient care. Does the health sector really want an educated nursing workforce that is skilled in

leadership and management? A nurse who will challenge the existing and increasingly embedded medical model?

3.2 The Infusion of Technology

3.2.1 Digital literacy.

The manner in which a contemporary learner engages with technology can reveal their social, cultural and generational experience (Jukes, McCain, & Crockett, 2010). For example, learners born after 1985 are generally considered to be 'digital natives' because they have grown up with technology (Prensky, 2001). Digital natives represent the largest enrolments in undergraduate education, requiring educators to acknowledge this shift in learner ability and preference (Australian Bureau of Statistics, 2013). Prensky (2001) asserted that digital natives learn differently—that they respond more readily to instant gratification and prefer to learn in social, group or networking activities. Beyond seeking pleasurable learning experiences, this generation of learners, when compared to their older counterparts, appear to have a different neurophysiology, whereby they can process information differently and faster (Jukes et al., 2010).

Incongruity and dissonance, then, may occur when those who determine the curriculum for digital natives are themselves, digital immigrants (Prensky, 2001). Clearly, educators need to be able to confidently wield these often unfamiliar, technologically-driven modes. Even though their re-education can be analogous to an immigrant attempting to learn the language and culture of a foreign country. It is predictable then, that some digital immigrants make this transition relatively easily, although they can display various detectable *'accents'* (Prensky, 2001, p 2). For example, the educator who preferentially prints emails or turns to the hardcopy of a text betrays their generational origins.

Howlett and Waemusa (2018) posit that the generational divide is becoming less clear as many immigrants have improved their digital literacy, due to increased and prolonged

exposure to technology. Inadequate time certainly has a negative impact on being able to develop specific technological knowledge (Huyler & Ciocca, 2016).

More pressing however, is the need for educators to change their mindset to being creative and open to the integration of technology into a curriculum (Mehta, Henriksen, & Rosenberg, 2019). Those who do not assimilate in this manner are likely to maintain a negative attitude towards technology use for education (Prensky, 2001) and be slow to adapt (Howlett & Waemusa, 2018).

The healthcare system into which nursing graduates will emerge has also embraced technology to deliver patient care and record patient data (Carroll, Richardson, Moloney, & O'Reilly, 2018). The competency and confidence of an educator's use of technology is not only crucial for curriculum design and delivery, but also to socialise students in preparation for clinical practice. For example, the collection of patient observations now incorporates digital technology, where a scan over their forehead with a hand held machine, will record their temperature (Bellchambers, 2015). Another hand-held piece of equipment will scan veins, so that venous access is easier to achieve.

Students in this era are not hesitant as using "networked digital tools…is as natural as breathing" (Kelly, McCain, & Jukes, 2009, p. 15). It is reasonable to assume that undergraduate nursing students generally, possess the high-digital confidence of their generation. Understandably, however they may have depleted competence levels when applying these skills to the technology utilised in the healthcare setting. In other words, they still need to learn how to apply a level of higher order thinking to their use of these tools. For example, to interpret the potential consequences of a temperature reading for a patient and to therefore respond appropriately.

3.2.2 Digital learning.

It is almost redundant to state that technologies suffuse every area of our lives. The avalanche of technological possibility is challenging educators in higher education to rethink time-honoured methods of delivering course content (Männistö et al., 2019). The idea of the 'bricks and mortar' of the respected higher education campus being the hallowed ground of all the learning is an outmoded notion. A new, contemporary learner will turn away from being the eager, passive vessel into which an esteemed authority pours knowledge. Yoder & Terhorst (2012) suggests that the competent digital learner will thrive in a technologically supported, student-centred, educational milieu. Männistö et al. state that technological burgeoning is expanding student learning far beyond conventional contexts where collaborative digital learning is boosting learning outcomes.

The diverse implementation of these digital platforms is across multiple disciplines (Gregory et al., 2016) and is increasingly being utilised in higher education. This suggests that the attributes of a virtual simulated learning environment (VSLE) can meet the expectations of contemporary students. The successful uptake of a VSLE however, is attributed to both institutional desire and educator perseverance (Gregory et al., 2015).

The new generation of nursing students, for the most part, possess considerable technological acumen and deserve their moniker—digital natives. Largely comprised of the age group born between 1980 and 2001, these millennial undergraduate students are challenging the traditional methods of content delivery (Yoder & Terhorst, 2012). The world in which these students were raised features a technologically driven connectedness that was not experienced by preceding generations. The suffusion of technology into every area of their lives has experts estimating that one third of their waking hours will be spent in front of a computer screen (Taylor & Keeter, 2010).

Even so, it is not only their use of technology that impacts foundational pedagogy; it is the *way* that this generation uses technology and equally important, what is available to them to use (Janssen, Tummel, Richert, & Isenhardt, 2016). To offer computer-based gaming as an example, users are multi-tasking, often creating virtual representations of real-life while concurrently communicating both virtually and in the real-world. Prensky (2007) contends that whilst playing, gamers have infinite opportunities to *pass* a 'level' and with each attempt, they learn through synchronous feedback and have the opportunity to perfect their actions and hone their choices towards eventual success.

Foreman (2003) asserted that "Games expose players to deeply engaging, visually dynamic, rapidly paced, and highly gratifying pictorial experiences that make almost any sort of conventional schoolwork (especially when mediated by a lecture or text) seem boring by comparison" (p. 15). Place this 'gamer' in a classroom and they will respond to learning in ways that their technologically dominated world has accustomed them.

For nurse educators, understanding the preferences of millennial learners means anticipating and accommodating the contemporary undergraduate nurse who will predictably expect multi-tasking (listening to the tutor and looking at a computer screen) and the delivery of fast-paced information from a variety of sources (Hart, 2017). As stated by Jukes et al. (2010), they have been shown to thrive when collaborating (this can be virtual or real-life) and thus constructing their own knowledge (through manipulation of non-linear hyper-linked multi-media). Additionally, they are engaged whilst learning relevant and perceptibly useful information.

Researcher reflection. The tools of education and nursing have changed and so have the students!

I confront reluctance or even a suspicion towards technology in all of the contexts in which I circulate professionally. For example, public hospitals are moving towards using electronic medical records (eMR) where all patient data can be stored and retrieved. Recently, when these were introduced into a nearby tertiary hospital, nursing staff were required to attend a two-day workshop to learn how to use the platform. I attended the workshop in order to understand the transition that might be required for the undergraduate students.

The nurses viewed this task largely as an onerous imposition. Not only were they confronted by the perceived complexities of the eMR system, they were also wary about the impact upon their role. Many felt that they would spend the entire shift working on the computer rather than being with their patients. These attitudes may hark back to culturally ingrained associations that nurses as carers should be at the bedside and that technology does not sit well with this image.

As I write this thesis, there is a lot of debate in my School of Nursing about how we should introduce students to the use of eMR. How the system currently operates is that clinical placement facilities give students a login code to the eMR training program before their placement. Using this, the students complete a health service driven, self-directed learning module on how to use the platform during their clinical placement. The anecdotal evidence so far is that all of the students go on to operate eMR with ease. I argue, then, that students are not at all intimidated by the technological savvy required to use eMR and that their digital confidence elevates them to digital competence with ease.

Many of my colleagues who are digital immigrants, argue strongly that we should use this technology during on-campus simulations so that students can be confident users of eMR when they graduate. The argument used for the investment in eMR, contends that it reflects

what students will see during practice in the hospitals. It is also maintained, that if students are familiar and confident with eMR, they will fit into the team ethos more readily because they perform with greater efficiency.

Despite the comfort with which the students make this technological transition, many of my colleagues persist with the stance that students must be given extensive exposure to the platform throughout their on-campus simulated learning exercises. My colleagues are possibly not distinguishing between their own reactions to the technology and that of many of the students. Sadly I think, while this attitude prevails, we underestimate our students' skill and adaptability and we are in danger of unwittingly placing an over emphasis on the learning of 'how to' rather than the higher order thinking of 'why' and 'what now'.

3.3 A New Era of Nursing Curricula

Changing the entire makeup of the nursing workforce requires a 'long-game' mindset. Nurse educators perpetually consider alternatives to current curricula to align learning outcomes with public health needs (ANMAC, 2019a). Additionally curricula is written in an attempt to counteract the effects of current healthcare policy (Nancarrow et al., 2014) in a climate of increasing complexity of technology and a high patient acuity (Forber et al., 2015).

The provision of consistently dependable, valuable, practical experiences for undergraduate nursing students is crucial in closing the theory-practice gap and in assisting students to move closer towards meeting the expectations placed upon them as graduates (Siggins Miller Consultants, 2012). As students have less clinical experience, the quality of that time is essential. Clinical facilities cannot guarantee a standardised quality experience. As such, to allow students to rehearse in the liminal space between theory and practice, some of those developing nursing courses have explored innovative platforms, such as simulation (Roberts et al., 2019).

In order to contribute to the development of critical thinking and clinical reasoning, simulated learning creates a solution, by increasing the predictability and quality of practical on-campus learning (Lee, et al., 2019; Shin, Rim, Kim, Park, & Shon, 2019). In other words, simulation can represent a clinical environment, which does not rely on the random happenstance of a quality learning moment to coincide with the presence of an eager student and skilled facilitator. In fact, a simulated scenario can be manipulated, replicated, considered and perfected (Erlam, Smythe, & Wright, 2016; Eyikara & Baykara, 2017). Simulation could be the link for the creation of a confident new graduate and RN of the future.

3.3.1 The case for simulation.

Spanning a range inclusive of low to high complexity and fidelity, utilising role-play, standardised patients, mannequins and computer-generated scenarios, the tools of simulation are varied, flexible and responsive (Eyikara & Baykara, 2017; Irwin & Coutts, 2015). When operated competently, simulated learning has been shown to enhance nursing students' confidence, critical thinking and communication skills (Roberts et al., 2019)—two areas at which criticism has been levelled at nursing graduates (Parker, 2014). By ensuring simulations are safe, controlled and replicable, students can achieve these learning outcomes through the rehearsal of both rare and regular clinical learning events (Irwin, Coutts, & Graham, 2019; Roberts et al., 2019). Fundamentally, the welfare and safety of patients will benefit from these projected improvements (Carroll et al., 2018; Gore & Thomson, 2016).

Stone (2010, p. 400) described simulation, almost a decade ago, as "the new frontier in health education". Indeed, it remains relevant and continues to provide educators with an adjunctive tool and a catalyst to overcome the shortcomings of contemporary higher education. For example, healthcare disciplines, such as exercise physiology and audiology have implemented simulated learning to either replace a portion of their clinical hours or particular types of practical experience entirely (Health Workforce Australia, 2010a, 2011). Despite this, the Australian Nursing and Midwifery Accreditation Council (ANMAC), (2019b) currently states that simulation is to be excluded from professional experience hours. Roberts et al. (2019) concurred with ANMAC's stance, suggesting that, in the Australian context, the replacement of clinical hours with simulation requires further exploration.

The use of technology in education, even tertiary education, is not a new phenomenon. The inclusion of contemporary educational technologies are seen as both a tool to deliver education and a catalyst to improve educational outcomes (Adams Becker, Cummins, Davis, & Yuhnke, 2016). These developments align with the tenets of a learner-centred education, and also serve the interests of the large cohorts of digital natives in undergraduate nursing

programs (Yoder & Terhorst, 2012). Contemporary higher education showcases the capacity of digital technology to facilitate asynchronous and synchronous interactions, which allow students and staff more freedom about *when* and *where* they engage in teaching and learning activities (Adams Becker et al., 2018).

Experiencing a resurgence since being identified in the New Horizon report (News Media Consortium, 2007) as a technology likely to experience widespread adoption, the use of virtual simulations has more recently been predicted to be able to transform "the delivery of knowledge and empower[ing] students to engage in deep learning" (Johnson et al., 2016, p. 40). This divergence, from what Dyer and Hurd (2016) label as 'surface learning', to the attainment of 'deep learning', aligns with one of the goals of contemporary education in nursing, where there is a deliberate move away from rote learned skills in curricula and a push towards clinical reasoning (Benner et al., 2010). Building this sort of technologically oriented approach, into the curricula of the future, will require a paradigm shift and a degree of pedagogical introspection about how to imbue virtual simulated learning in nursing with a theoretical point of view.

Virtual worlds are flexible and highly engaging (Gregory et al., 2013) with platforms such as Open Sim, Unity 3D, and Minecraft having evolved significantly, due to improvements in capacity and connectivity since their inception. Second Life (SL) is an example of a VSLE that offers dynamic learning experiences where this three-dimensional, virtual world can facilitate interactive, collaborative relationships between participants in a rich, social, learning environment (Ghanbarzadeh & Ghapanchi, 2018; Dalgarno, Lee, Carlson, Gregory, & Tynan, 2011). The diverse and successful uptake of SL in higher education is attributed to both institutional desire and educator determination (Gregory et al., 2015).

Despite the graphics of simulated environments such as SL being rather rudimentary when compared to gaming technology, undergraduate students report profound immersion

where actions inworld are authentic and resemble real-world behaviour (De Gagne, Oh, Kang, Vorderstrasse, & Johnson, 2013; Irwin & Coutts, 2015). The synchronous and asynchronous capabilities of SL are congruent with the needs of the contemporary learner, who divides time between life and learning commitments regardless of geographical constraints and the need to navigate the logistics of various schedules (Hart, 2017).

3.4 Summary

Despite its historical claim to nurturing, nursing is poised to redefine its identity to include the use of technology in the provision of quality, safe patient care (Archibald & Barnard, 2018). The profession of nursing however remains, at its core, a profession that provides care and is thought of as a 'hands on', albeit surrounded by an increasing prevalence of medical technologies within the healthcare setting (Carroll et al., 2018). Along with broader social influences, the coalescence of nursing, education and technology has brought to bear a challenge to nurse educators to alter curriculum development and delivery to better meet the needs of the graduates and healthcare workforce.

A global shortage of RNs is driving the need for contemporary nurse education to feature management, clinical leadership and critical thinking skills. To continue this reform, a review of content delivery is warranted so the needs of the 21st century student are addressed (Hart, 2017). Making decisions about how much technology should be included in the curriculum and at what point in the learner's journey it should be introduced, presents a high-tech/high-touch conundrum. Virtual simulated learning environments such as Second Life are an approach to teaching that demonstrate learner affordances such as flexibility and heightened engagement and could potentially meet the needs of nursing students, higher education and healthcare organisations.

Chapter Four: Virtual Learning Environments

4.1 Introduction.

Fuelled by research that demonstrates the importance of student-centred or learner-focused approaches to education, virtual learning environments (VLEs) have been shown to be not only entertaining (Tokel & İsler, 2015), but key in achieving student engagement (Claman, 2015; Rogers, 2011). Additionally, VLEs can provide collaborative and flexible learning opportunities (Kidd, Knisley, & Morgan, 2012; Männistö et al., 2019).

A VLE is any learning situation that uses technology or, more specifically, is reliant on the use of the internet for student participation (Girvan, 2018). A VLE incorporates any technologically-assisted, educational platform or device. Some examples are learning management systems such as BlackBoard, Moodle or Canvas, (that include resources, discussion boards, and quizzes) with integrated add-ons (assessment management software like GradeMark, Turnitin or e-portfolios). These systems have possible links to social media and telecommunication platforms such as Facebook, Skype or Zoom, and of course virtual worlds such as SL or Sims. A VLE enables asynchronous access, accommodating the distance and time between users.

The evolutionary changes of content delivery in higher education settings have challenged traditional methods and encouraged a reassessment of how students learn and indeed, what it is they need to know (Adams Becker et al., 2016; Miles & Fogget, 2016). Shifts in pedagogy, in concert with both social and practice trends have seen the continued development of the potential of technologically-assisted education. The acceptance and adoption of VLEs as a platform for learning continues to rise, as a supplement to face-to-face

education (blended learning) and as a stand-alone mode of delivery (Adams Becker et al, 2016).

4.2 Virtual Worlds

4.2.1 Definition.

For the purpose of this research, a virtual world has is defined as:

> Shared, simulated spaces which are inhabited and shaped by their inhabitants who are represented as avatars. These avatars mediate our experience of this space as we move, interact with objects and interact with others, with whom we construct a shared understanding of the world at that time. (Girvan, 2018, p. 1099).

Other definitions include the environmental attributes and interactive capabilities of the virtual world (Erlank, 2012; Girvan, 2018; Harbinja, 2014). Varied business models determine the accessibility of virtual worlds to the general public. Some worlds are closed to the general public, such as those owned by military or private organisations, while others allow access to the public (though at a cost), such as World of Warcraft (Harbinja).

4.2.2 History.

Despite the general perception of virtual worlds as revolutionary technology, their emergence predates the internet (Harbinja, 2014). The use of text and role-play supported the concept of collaborative 'world building' within games as early as the 1970's. The ensuing iterations across the years have resulted in the highly complex virtual worlds and massively multiplayer online role-playing games (MMORPGs) that are available for users today. Contemporary virtual worlds have a capacity to host over 10,000 simultaneous users who can either play, learn or work in a remarkable 3D representation of pseudo-reality (Downey, 2014).

4.2.3 State of play.

There are approximately 170 virtual worlds that have been designed for either educational or entertainment purposes (KZero, 2014a). The longitudinal data collected by KZero demonstrated a wide and consistently increasing user-base of virtual worlds. An insightful statistic is the number of juvenile user accounts for virtual worlds such as Minecraft (110 million), Poptropica (313 million) and Stardoll (310 million) (KZero, 2014b). These young players may soon be in higher education and with their increased familiarity of digital gaming (Savin-Baden, Falconer, Wimpenny, & Callaghan, 2015) there is an impetus for educators to become knowledgeable and adept users of educational technology.

It is not just young players who use online gaming purely for entertainment. Recent reports showed that around fifty per cent of adults in the United States admit to gaming for pleasure (Entertainment Software Association, 2018). Approximately sixty percent of these disclosed that their children influenced the games that they were buying and playing. The 2018 data also demonstrated the widespread uptake of using virtual worlds via mobile apps. A mobile game can be played on any device that is transportable such as a phone, tablet or media player. A popular virtual world game 'Fortnite' was generating US$1.82 billion daily (Statista, 2018), and had over 125 million registered users (Gough, 2018).

4.2.4 Uptake in higher education.

Given a lack of specific goals or ultimate aim, Second Life (SL) (see Section 2.1) is not referred to as a game, unlike other technologically-supported multiplayer environments such as Minecraft or Call of Duty (Aebersold, Tschannen, Stephens, Anderson, & Lei, 2012). Over 750 higher education institutions are registered users of SL making it the most popular virtual world platform in education (Gregory et al., 2010). Reinsmith-Jones, Kibbe, Crayton, and Campbell, (2015) have acknowledged that the use of SL continues to be adopted in higher education despite some institutions opting for other virtual worlds due to administrative

changes. A greater understanding of knowledge transfer from virtual simulations to real-life (Savin-Baden et al., 2015) is compelling evidence for the ongoing development and utilisation of virtual worlds in higher education. Highlighting the importance to teaching and learning, Adams Becker et al., (2018) support the ongoing utilisation of virtual worlds, as they are viewed as a persistent and key technological development.

4.2.5 Application to nursing.

A lack of authentic learning opportunities has seen some practically-orientated disciplines invest in developing virtual environments where students can learn anytime; anywhere (Dudding & Nottingham, 2018; Janssen et al., 2016). The learning opportunities afforded in SL have been proven to "promote dimensional collaboration and heighten student engagement" (Irwin & Coutts, 2015, p 576). The added benefit of VLEs like SL is that they provide an opportunity to rehearse skills in a safe environment (Janssen et al., 2016; Kidd et al., 2012). There are dual safety benefits in this context: the student is in a supported learning environment and know that there is no physical risk to those in the simulation (Savin Baden et al., 2015).

Researcher reflection. Stepping in time—or catching up with it. The changing role of the nurse educator.

It has been interesting to take in the response of my children at different points of this research journey. Initially, the thought of their mother playing their type of games possibly didn't resonate on a deep level with them—it was just a wonderful shared experience.

More recently, I have been asking them about how they create their avatars in the games they play—did it have a relevance to them and the way they play. When they realised what I was asking them related to my work of educating nurses—I could see they sensed an absolute disconnect. What was I doing using technology in this way? I am sure my children were a little taken aback. I am, after all, a middle-aged mother, a teacher of nurses and none of these roles should use technology (outside of using Facebook to connect with their sporting team coaches). Moreover, how could being in a game as an avatar relate in any way to being a nurse?

4.3 A Systematic Review of the Experience of Using Second Life in the Education of Undergraduate Nurses

Irwin, P., & Coutts, R. (2015). A systematic review of the experience of using Second Life in the education of undergraduate nurses. *Journal of Nursing Education, 54*(10), 572-577. doi:10.3928/01484834-20150916-05

Simulation for teaching is documented within the writings and ruminations of the early philosophers (Topor, 2002) and whilst contemporary education has moved beyond the puppets of Aristotle, the use of simulation to inspire learning still remains. Simulated learning environments (SLEs) offer forms and levels of realism and can include among other strategies role play, task trainers, mannequins and virtual environments. As a methodology simulation is consistently utilised in aviation and the armed forces; two areas that are often credited as the founders of modern simulation (Rosen, 2008).

Aligned with the pedagogical paradigm of learner centeredness, higher education in particular, is now utilising simulation for the teaching of health workers (Health Workforce Australia, 2010). In addition to this, there is a general acceptance among nurse educators that SLEs contribute to the provision of learning opportunities that ultimately enhance clinical experience (Bland, Topping, & Wood, 2011), despite there being a lack of robust research to support these views (Health Workforce Australia, 2010b).

Workforce training research supports the notion that a current and continuing shortfall in the health workforce can be causal to a lack of valuable clinical placement opportunities for undergraduate nursing students; (Andre & Barnes, 2010; Health Workforce Australia, 2014). In lieu of this changing public health profile, there is also a concomitant need for curriculum reform (Nancarrow, Moran, & Graham, 2014).

Further to this, the expectations of a graduate nurse have altered as health workforce needs dictate that graduate training must, along with the capacity for collaborative patient care, include skills in management, leadership and critical thinking (Benner, Stutphen, Leonard, & Day, 2010). Educators report that SLEs can potentiate student learning and with technological innovations some are now considering the possibility of alternate forms of simulation such as those using a virtual environment.

In the higher education sector, and despite being in an exploratory phase of application, the use of Virtual Simulated Learning Environments (VSLEs) offers a diversity of application in educational practice (Gregory et al., 2013). The potential of this market has been seized with enthusiasm by Linden Labs, the creators of a virtual world known as Second Life (SL).

A diversification in student profile (Ahmad, Wan, & Jiang, 2011; Yoder & Terhorst, 2012) continues to promote a need for flexible delivery of content; a demand that can be met by the ever increasing affordances of technology. The adoption of Virtual Worlds (VWs) as a platform to deliver simulation has come at a time when changes and needs in education are parallel and responsive to technological social advances. Through broadband network rollouts, increased bandwidth and improvements in technological infrastructure the use of VWs has moved from a clunky slow technology to now being able to offer an interactive synchronous learning opportunity (Chau et al., 2013).

4.3.1 Background.

The synchronous capabilities of VWs can enhance contemporary higher education in a space where, regardless of time and geographical constraint, learners divide time between life and learning commitments. A virtual world occurs when computer generates a three dimensional realm where users are represented by an avatar; a self-nominated digital representation of themselves (Boulos, Hetherington, & Wheeler, 2007). Capabilities of the avatar include purposeful movement, gesturing, speech and text chatting. These features

coupled with the synchronous nature of a virtual world can potentiate a rich social environment (Dalgarno, Lee, Carlson, Gregory, & Tynan, 2011).

Perhaps it was because the potential of technology was not entirely realised when Clark (1983, p. 445) posited that technologies were "mere vehicles" to deliver content. In added fairness, contextually this comment also reflects the didactic nature of pedagogy at that the time. Whilst seemingly not as antiquated, others liken the use of technology to "a lever and an enabler of teaching approaches" being careful to stress that this modality is not the driver (Southern Cross University, 2011, p. 12).

Kiili (2005) cautions that active learning opportunities are missed when technology is used as a substitute teacher, where content is distributed en masse to a passive learning audience. When recounting Heidegger's notions of technology, McCullough contends that "technology is the epistemology of the age" (2002, p. 22). Furthering this notion is the view that technology is not just an object void of presence or the power to sway thinking; it can influence pedagogy extending well beyond the chalk and talk teaching styles of a bygone era (Martin et al., 2011; Yoder & Terhorst, 2012).

Nursing educators have the onerous task of ensuring that their teachings are not only inclusive of contemporary educational and disciplinary theory; there must also be a distinctive link with disciplinary practices that acknowledge and are responsive to the changing demands of health education. A persistent and foundational argument in prevailing nursing educational discourse is focused upon the quality and readiness of the graduate nurse to take on the role of the Registered Nurse (Grealish & Smale, 2011; Sculley, 2011); a focus that drives the educational quality of the developmental experience of student nurses.

An adjunct argument centres discussion upon rigid out dated curricula that is now considered inept in tackling the public health needs of the 21st century (Andre & Barnes, 2010; Julio et al., 2010). This together with reports such as *Vital Signs 2013: The state of*

safety and quality in Australian Health Care (Australian Commission on Safety and Quality in Health Care, 2013), highlight the imminent need to change and consider alternate curriculum and alternate modes in which to deliver the content.

4.3.2 Purpose.

This systematic review seeks to present and interpret the current applications of the virtual world of Second Life in the education of undergraduate nursing students.

Search engines, terms and limits.

As valuable contributors to evidence base knowledge (Whitmore & Knafl, 2005), both experimental and non-experimental research, on the use of Second Life, were considered. An extensive literature review was conducted. Searches included electronic databases, manual searches of reference lists and Google scholar. Databases searched were CINAHL, Medline, Education Research Complete, ERIC, Computers and Applied Sciences and Technology and Library, Information Sciences and Technology. Prior to 2008, particularly in health education practice, there is limited evidence of the use of Second Life. Therefore, peer reviewed manuscripts published between 2008 and 2014 was a limiter on all conducted searches.

Inclusion criteria.

The primary focus was to review the use of SL in undergraduate nursing education. Inclusion criterion consisted of articles presenting primary research that utilised SL with undergraduate nursing students in the higher education sector. Research that focused on the perspectives of both educators and learners was included.

Exclusion criteria.

This current review, though tangential, builds and extends on the work of De Gagne, Oh, Kang, Vorderstrasse, and Johnson (2013) who presented a synthesis of literature that

reported on virtual multidisciplinary health education perspectives between 2000 and 2012. Despite taking a similar approach, the aim was to review research utilising Second Life in solely undergraduate nursing education. Excluded therefore were, (i) research articles that focused on post graduate nursing education, (ii) research that reported on the use of SL in multidisciplinary education and also (iii) publications that presented the findings of research already included.

Search terms.

The search terms were nurse* and (know* OR learn* OR educat*) and (virtual and world OR reality).

Articles retrieved.

6 database searches with limiters elicited 285 papers after the removal of duplicates.

Quality assessment.

As the first phase of quality assessment, the abstract of each article was reviewed. Research that focused on inter professional or post graduate education was excluded in this phase. Full texts were then retrieved for a final quality assessment. Papers were excluded that did not report on primary research. Papers that presented the same research results from a previous study were also excluded (same authors). Small research studies including pilot research remain in this review due to their phenomenological significance. Fourteen papers remained after quality assessment.

4.3.3 Results.

All studies were based within the higher education sector with a global representation of the United States of America, the United Kingdom, Finland, Australia and Asia. Of the fourteen research articles reviewed, students as the sole research participants were the focus

of twelve articles, with educators as sole participants, in two. Three publications utilised qualitative methods such as interviews and six relied on quantitative methods such as a survey and performance assessment tools. Five applied mixed methodological approaches. In order to develop an understanding of the perception of using SL as an educational tool, ten studies utilised participant response via open questioning. To determine the learning value of the utilisation SL, four relied on objective performance measures. Thematic analysis of the papers reveals the following emerging concepts: Transferability, learner centred approach using Second Life, evaluation of Second Life as a new emerging technology.

4.3.4 Findings and discussion.

Transferability.

Narrowing the gap between theory and practice in nursing education is an ongoing challenge for nursing educators. It is therefore not surprising that it is a dominant theme from this review. The global priorities of patient safety, decision making and assessment skills were evident. In particular, seven of the studies examined the ability of the student to link theory that was previously delivered in 'face to face' or didactic modalities to practice in the virtual world of SL.

McCallum, Ness, and Price (2011) demonstrate competent decision making skills in a group of undergraduate Bachelor of Nursing students who completed an assessment in SL. These students (n = 5) were presented with a ward simulation where they were instructed to prioritise their decisions based on a nursing assessment of patient need. The authors conclude that the students were able to link previous theory to clinical practice, despite the absence of many of the usual visual cues.

Kidd, Knisley, and Morgan (2012), conduct one of the first studies of assessment using SL, in mental health nursing. Students (n = 126) were given basic avatar training and then completed an assessment where they were required to review a mental health client in the

virtual community setting in SL. The basic training required of the students was estimated to take between six and eight hours. Other course work was removed due to this increased workload. Student participation in the virtual simulation was compulsory however responding to an evaluation survey was optional. Conclusions drawn from this study suggest that SL affords the opportunity for students to interact with mental health scenarios in a physically safe environment. Students reported that as an educational tool, SL was moderately effective (Kidd et al.).

In order to learn about patient safety, students (n = 15) were presented with three scenarios (Aebersold, Tschannen, Stephens, Anderson, and Lei, 2012). Evaluation by educators of this SL experience was positive where they reported an alignment with the learning objectives and a link to real clinical situations. Extending on these findings Aebersold, Tschannen, and Bathish (2012) demonstrated that virtual simulation does improve student performance in both leadership and communication. It is worth noting that in both of these studies students participated in either role playing or observer positions.

Evans and Curtis (2011) utilise observer and active roles. After initial on-campus tuition, students participated in simulations focusing on lateral violence where the learning objective was to enact conflict resolution. Respondents (75%) stated that they felt more comfortable learning this content in SL in preference to real-life and that they were able to easily transfer previously learned information into the virtual practice.

Extending this concept of participation through observation, Tao, Lim, and Watkins (2010) presented a simulation to students (n = 35) where tutors acted as nurse and patient with the use of avatars in SL. The simulation was exhibited to students synchronously in a classroom via a data projector. Students gave real time opinions and generated discussion as a birthing scenario was played out by faculty. Student self-report suggests that learning the content using this modality led to an improved understanding, higher engagement with the content and facilitated the link from theory to practice.

Research by Tschannen (2012) utilised both control and intervention groups to determine the effectiveness of SL as a learning platform. The control group had rehearsed previously learned theoretical concepts of communication and patient safety in the university's clinical simulation lab during three simulations. The intervention group rehearsed those theoretical concepts in three virtual simulations using SL. All participants were then individually assessed using a Capacity to Rescue Instrument (CRI) during a simulation in the university's clinical simulation lab. The intervention grouped scored higher overall demonstrating that the virtual simulation rehearsal resulted in a greater ability to transfer knowledge from didactic theory to real clinical situations when compared to simulation rehearsal in a simulation lab. Tschannen suggests this may be due to the increased realism in a virtual simulated learning environment, possibly the anonymity afforded in SL or the 'deliberate' practice that is afforded because of SL.

Three studies focused on the concept of transferability, directly observed as student capability to display learned behaviour in SL, similar to practical capabilities in real-life. The measurement of the effectiveness of decision making and collaborative practice was the focus of research by Rogers (2011), where clinical decisions were required to progress the virtual simulation. For example, nursing students were intentionally located separately, needed to work as a team and to also agree on the clinical interventions in order for the simulation to progress. The work by Rogers concludes that the setting of SL can provide an environment that is conducive to the construction of knowledge. Other significant findings were the reported heightened engagement of students who were presented with the real-life scenarios in SL and also the way they reacted positively to the team work.

The transferability of newly constructed 'virtual' knowledge was examined in two studies. Sweigart and Hodson-Carlton (2013), Sweigart, Burden, Hodson-Carlton, and Fillwalk (2014) focused on the educational effectiveness of SL as a learning platform by observing undergraduate nursing ability in the performance of a client interview. Results from

both research projects indicated that those participants who had not rehearsed interviewing skills in SL did not interview as effectively in a real-life assessment interview. This was measured by the number of questions and follow up questions asked by the participant during the interview. This demonstrates the effective transference of virtual knowledge to real-life practice.

Perhaps the most significant testament to the transferability of learning in SL is the research by Schmidt and Stewart (2010), where the use of virtual clinical hours replaces real-life clinical practice time. A limited and comparable number of hours are offered in addition to the submission of a brief written assignment. These authors "feel the virtual world offers a creative, consistent, and verifiable way for selected clinical experiences." (p75). Despite the appreciation that simulation in general offers an authentic learning experience there continues to be debate and reservation about the trading of simulation hours with clinical time (Hanberg & Baraki, 2009; Health Workforce Australia, 2010b).

Learner-centred approach using Second Life.

Student centred learning is a contemporary pedagogical approach that places the student at the centre of a cycle where learning is meaningful and interactive and challenges the learner to identify their own learning needs (Billings & Halstead, 2009)

> "A learning centred approach directs teaching and curricula towards the complete learning process acknowledging the attributes and active roles of learners alongside those of teachers, the discipline, and the community. Such an approach means that students and teachers are partners in learning and that disciplinary ways of knowing and doing are valued"

(Southern Cross University, 2011, p. 4).

This review revealed that a heightened student engagement can be afforded by interactions in the SL environment (Chow, Herold, Choo, & Chan, 2012; Rogers, 2011;

Tschannen, 2012). Further, adjunctive notions of a learner centred approach include learner fun (Evans & Curtis, 2011) and collaborative learning opportunities (Kidd et al., 2012; Rogers, 2011). In research where students were not actually 'driving' an avatar (watching others in a SL simulation) the results were equally positive (Tao et al., 2010). This echoes findings from research about teaching and learning using high fidelity simulation where students report high levels of engagement and learning outcomes when watching peers participate in a simulation (Jeffries, 2007).

Sweigart et al. (2014) describe a multiyear evolution of the use of SL across the curriculum. Students were able to engage with virtual case studies that depicted various ages, gender and multi-cultural community members. Sophomore students interviewed the same avatar client for a range of assessments across the curriculum including a general health assessment that led to the development of a nutritional plan and a urogenital-sexual assessment. Conducting these interviews on the same avatar client was seen to further enhance the realism of the experience by simulating ideal nursing practice methods as is recommended in a learner centred approach (Southern Cross University, 2011).

Skiba (2009) and Teräs, Myllylä, Kaihua, and Svärd (2011) explore unique perspectives of student centred learning from the educator's perspective. During interviews, ten Finish teachers who use SL demonstrated that creating collaborative practice among students and teachers is a feature of using SL. The virtual platform is seen to reduce the hierarchal relationship between student and teacher (Teräs et al.). Supporting the findings in eLearning literature, Teräs et al. describe educators who utilise SL as being facilitators of knowledge, whereas student learning is largely self-driven. In this environment the presentation of authentic content allows the student to create knowledge.

Learner centeredness was a key theme in the study conducted by (Chow et al., 2012) where enthused students initiated and guided their own learning based on their identified needs during the simulation of a rapid sequence intubation. The content of this teaching

module was outside of the course syllabus and completion of the simulation was a testament to the students' motivation. This study adds to the paucity of information about content delivery using SL. Perhaps this acknowledges authentic teaching practices as discussed by Teräs et al. (2011) where the more traditional content driven didactic methods are aligned to learning by knowing rather than by doing. It would seem that SL may be considered as a learning *with* technology more so than learning *from* technology.

Evaluation of Second Life: As a new and emerging education technology.

In order to investigate learning in the virtual environment of SL, researchers either utilised a validated instrument or developed an evaluation methodology. The lack of an instrument that 'fitted' the unique needs of the research was cited as to why this option was chosen. These studies mainly relied on the perceptions of student learning as gauged by the student and in fewer cases (three) by the educator. Six studies utilised a researcher developed survey to gather data in combination with the use of open ended questions. Other techniques used as an adjunct to surveys were thematic analysis of student written reflections and also review of text chat communications. Small sample size was identified as a limitation in many of the studies (Aebersold et al., 2012; Kidd et al., 2012) however this would be expected given the novel subject matter.

Contrastingly, Chow et al. (2012) reported findings via the Technology Acceptance Model (TAM) and as the name suggests this tool seeks to understand the reasons why a technology, in this instance SL, is either accepted or rejected. This study shows that the perceived ease of use is the most "influential construct to directly affect perceived usefulness and behavioural intention." (p 1140). This result highlights the importance of student and staff preparedness when introducing SL as a teaching and learning modality. Aebersold et al. (2012) used the Emergency Medicine Crisis Resource Management (EMCRMC) tool to show that student performance improved significantly in the areas of team communication and professional behaviour. The Capacity to Rescue Instrument (CRI) was adapted for use in

Tschannen (2012) in order to determine individual student performance in nursing competencies. The results of this study demonstrate clear evidence that the transference of learning from didactic methods to the clinical setting is enhanced via virtual rehearsal. Review of the research beyond data collection and analysis has implications for future research also.

Skiba (2009), a narrative retrospective account from three pioneers of SL offers discussion of local issues that either helped or hindered the successful use of SL in education. All three recount that initial support from enthusiastic virtual groups, such as Virtual Ability and Wisconsin Technology Enhanced Collaborative Nursing Education and also their local university Teaching and Learning Departments was invaluable to their adoption of SL. Students who were resistive to the use of SL were comparably anxious and hesitant to adopt other learning platforms such as blogs and wikis. The three pioneers interviewed agreed that the both staff and students had a large learning curve to master the basic skills required to operate in SL and that technical support was of benefit.

Evans and Curtis (2011) report the impact of initial poor faculty readiness where as a result the simulation project did not commence without incident causing frustration for students. Faculty attitudes such as lacking in self- confidence and also ability to use the technology was also shown to potentially influencing student attitude towards interacting within SL (Kidd et al., 2012). Less 'engaged' staff such as those who are part time and casual were not as comfortable with the use of the technology and their fearful or negative attitude was considered as negatively influencing student response.

Maximum fidelity such as realism, or the full potential of SL was not utilised in some of the reviewed studies. Communicating in SL can be achieved through multiple modes including live speech. In other words when the person operating an avatar speaks through this mode, it is audible in the virtual world immediately. Many of the studies chose to use text chat (where users type communication) exclusively so that a printed record of the dialogue

could be used as an adjunct-learning tool for example during debriefing sessions (Evans & Curtis, 2011; Kidd et al., 2012). McCallum et al. (2011) note however, the use of this slower form of communication as reason for missed student actions during their simulation study. Whilst positively reviewed by the students in Rogers' (2011) study, the enforced collaboration required in this simulation, though not reflective of practice behaviour, was applied as a learning strategy.

4.3.5 Conclusion.

A review of the current research on the use of Second Life as a platform in teaching and learning within undergraduate nursing curriculum is presented. Many of the studies present education in a learner centred environment where SL engendered collaborative learning and heightened students' engagement. The transference of learning was established in a number of studies where students were able to demonstrate previously learned theory via assessed practical skills in either SL or real-life. This review demonstrates that research investigating the use of Second Life in undergraduate nursing is in an early stage and whilst further development is required, there are positive outcomes from these investigations that suggest that further research is certainly warranted. It is important to ascertain if the learning in Second Life is unique or indeed can be further validated with larger cohorts of students. Once this occurs, nursing curriculum developers can include Second Life as a teaching and learning platform that will indeed provide the opportunities for learning that are lacking in the current clinical setting and serve as a valuable adjunct in the education of the future health workforce.

4.4 A further update

The most recent work using SL with undergraduate nursing students builds on previously established findings in the wider literature relating to presence. Situated in a simulated hospital ward in SL, Chow (2016) challenged students to apply recently learned infection control procedures to various patient presentations. During a voluntarily attended workshop, students were introduced to SL and then asked to develop their own avatar and proceed with the virtual activity. Whilst the students' ability to identify the appropriate personnel protective equipment was reportedly logged during the study, these results are not presented in the research findings.

Extending the notion of presence, Chow (2016) explored four determinants of this phenomenon: perceived usefulness; perceived ease of use; computer self-efficacy; and subjective norm. The subjective norm refers to the perceived degree of demand that significant others place on an individual to engage in, or reject, certain behaviours, in this case, to use the technology. Resolving that students with the highest computer self-efficacy experienced the greatest level of presence followed by the perceived usefulness, a recommendation from Chow was to increase the perceived usefulness of using virtual worlds. Additionally it was recommended that if students lacked perceived usefulness, any difficulties using SL may negatively influence their decision to learn content within this environment.

Beyond learning content, Menzel, Willson, and Doolen (2014) sought to explore SL's capacity to achieve transformative learning. The purpose of their investigation was to compare, via a module about the concepts of poverty and health, the pedagogical effectiveness of active learning in SL with passive online learning. Adopting a randomised controlled trial methodology, nursing students were assigned to either a control group (online delivery) or an intervention group (SL simulation). It is important to note that the speech functionality of SL was not utilised for this study and all SL participants were required to use

text to communicate. Text only communication decreases the synchronicity of SL as it takes longer to deliver and receive communications.

The results clearly demonstrated that those students who used SL experienced greater positive changes in attitudes about poverty than those in the control group. Menzel et al. (2014) reported that students required significantly less time to learn how to use SL than academics (around one quarter of the time). Additionally, due to the interaction with students, academics who were familiar with facilitating learning via face-to-face simulation as well as SL simulations preferred the face-to-face versions.

Tilton, Tiffany, and Hoglund (2015) utilised the speech capacity of SL where facilitators role-played as patient avatars during simulations about chronic ill health in Community Care. Recognising that their undergraduate curriculum did not adequately prepare their BN students for community RN roles and in an attempt to meet workforce expectations, the students were offered virtual simulations to conduct health assessments.

Following orientation to SL, 79 students conducted assessments with three virtual avatar patients: a preprogramed avatar (automated); an avatar operated by the facilitator (in role-play); and two case studies described on pop-up note cards in SL. A one-hour face-to-face debriefing session was offered to students following the virtual experience (Tilton et al., 2015).

According to the results, students clearly preferred conducting their assessment working with the patient avatar controlled by their facilitator. Further to this, Tilton et al. (2015) reported that students perceived the virtual environment as non-threatening environment and conducive to learning. Whilst the post simulation debriefing sessions were reported as valuable to student learning, it is not clear why these were conducted in face-to-face mode.

4.5 Summary

Because of the technological revolution, teaching and learning in higher education is undergoing change. This is due to a multifaceted uptake and use of technology that is challenging institutions to develop learning across multiple virtual platforms, whilst also being cognisant of varied capability.

Increasing discourse in the literature focusses on the affordances of using a virtual world as a platform for education. Specifically, the results of a systematic review (Irwin & Coutts, 2015), identified that Second Life is learner centred and when utilised with undergraduate nursing students, may contribute to narrowing the practice theory gap. Research further supports the notion of presence and immersion, as well as usability (Chow, 2016).

There is an unverified expectation that nursing students will confidently and competently navigate virtual educational platforms and specific digital health software, whilst also traversing the nuances of healthcare environments and higher education. In order to fully know about how nursing students learn in Second Life, a more robust understanding of their interactions is now warranted. Therefore, this current research is positioned during a unique and historical juncture of healthcare, education and technology.

Chapter Five: Research Methods

5.1 Introduction

Positioned within an ecology of learning framework (see Section 1.2.2), and adopting a focused ethnographic approach, this research explores the nature of learning within the context of nursing education—specifically, the utilisation of the virtual world of Second Life (SL). The aim was to focus on how students learn when interacting as an avatar whilst enacting a nursing role. This chapter therefore, presents the qualitative approach taken, the research setting, the participants, data collection strategies and techniques for analysis.

Classroom culture is an example of a subculture that Polit and Beck (2014) would refer to as micro-ethnography or focused ethnography. Ethnographers, in a general sense, seek to understand culture though the inferences of speech, action and artefacts (Tedlock, 2005). A basic tenet of ethnography remains to identify and understand all that is human "the human being the object and the subject of the inquiry" (Tedlock, p. 471). This research is about student nurses, specifically the influence of multiple perceptions that exist within the subculture of students learning within a virtual world.

Nuances of contemporary communication are fast-paced and complex (Horlick-Jones & Rosenhead, 2007). By incorporating multi-methods in data collection, the researcher maximised exposure and was informed of culturally relevant communications, which led to a rich cultural understanding synonymous with focused ethnography. The research design adopted strategies of interviews, observation and the collection of artefacts.

Researcher reflection. Holding the mirror of truth.

In the early days of ethnography, researchers would be accused of 'going native' if they were seen to develop relationships or display a level of sympathy to the needs of those being studied. I could be accused of already being a native as I am a nurse, a student and an academic. It would seem I am indeed native to all possible influences within this study.

That being written, I heed the warnings of a Bhagavan guru who told her female researcher "You're taking this on tape. You'll take this and do a business…In your university you'll say, I saw this, and I saw that. This is what Bhagavan is. This is why you learn this: not to understand it" (Narayan, 1989, p. 59 cited in Tedlock, 2005). As suggested by Tedlock, it is my hope that through analysis of multiple discourses, what matters to me has been exposed beyond the narrow scope of academia to the array of cultural experiences.

5.2 Focused Ethnography

Focused ethnography seeks to understand an element of a social environment by focusing on one section of it (Knoblauch, 2005). Savage (2000) contended the value of focused ethnography lay in its ability to consider the links between the micro and the macro; the everyday local aspect within the broader cultural context. Roper and Shapira (2000) offered that focused ethnography allowed the view of the participants to be understood within the wider societal realms and for the researcher to explore within a defined subculture where there was a contextualised problem or a distinct issue.

An ethos of holism in nursing theory drives much of contemporary nursing practice where a patient is more than the sum of their parts (Drevdahl, 1999). The adoption of focused ethnography for this research is in step with other nursing and academic qualitative research where; "the goal is often to enhance and understand practice by studying specific phenomena within distinct client or professional cultures and sub-cultures" (Cruz & Higginbottom, 2013, p. 2). Perhaps this is why nursing research is seen to align closely with focused ethnography.

A foundational understanding is of the contextualised layered self (Cruz & Higginbottom, 2013). Focused ethnography, therefore supports the ecology of learning. The openness and collaboration that is required in focused ethnography runs parallel with the openness and the interdependence presented in the conceptual framework (Seely Brown, 2000). Reframing or reflecting on ideas from alternative views aligns with the ecology, where repositioning of ideas and diversifying offerings are key to teaching improvements (Samaras & Freese, 2009; Seely Brown).

Exploring interactions between systems (see Section 1.3.2) is key when considering an ecology of learning. Therefore, this research seeks, as expressed by Tedlock (2005), to investigate and understand the multiple perceptions and perspectives rather than, the complex

product of them. It is within these interactions that an ethnographical approach will expose the reality of the subculture.

Knoblauch (2005) states that within focused ethnography, *"*one needs to have knowledge of the field of which it forms a part" (para 5). The researcher has extensive experience of academia, nursing and undergraduate education. This further supports the principles, which state that the researcher should have an understanding of the domain of inquiry (Higginbottom et al., 2013). Given the intent is to study a specific aspect—learning in a virtual world, the researcher is skilled in teaching delivery via virtual approaches. Use of ethnography as described by Fetterman (2010) provides a dimensional opportunity to understand the facets of being a social human through reliable and authentic means.

5.3 Ethical considerations of Data Collection and Management

This research followed all ethical guidelines from the Southern Cross University Human Research and Ethics Committee (HREC). The approval number for this research is ECN-13-201. Once approval was given from the HREC (see Appendix A: Human Research Ethics Committee approval), all informants in this research were invited to participate by the researcher initially via email communication through their webmail (see Appendices B, C & D).

All data related to this study was stored in a secure format. All de-identified transcripts were stored in a digital format on a secure password protected drive. All hard copy documents were housed in secure storage in the researcher's office for the duration of this study. Any data that was shared with participants and supervisors for the purpose of verification during the study was de identified prior to sharing. Once the recorded session had been de-identified and transcribed, the original recording was then destroyed.

5.4 The Virtual Curricula. How the Participants Interacted in Second Life

5.4.1 Overview.

During the time of this research, Second Life (SL) was utilised in two courses within the Bachelor of Nursing (BN) during the second year of study and one course in the conversion program during the first year of study. The following describes the interactions of students and staff interacted in this virtual environment.

5.4.2 Adopting an avatar.

Training resources were developed for all staff and students who intended on utilising SL in the BN and conversion program. These catered for all levels of technological capability. A cache of video help files were available to demonstrate basic skills from how to: download Second Life; create, acquire and move an avatar and; find the land owned by the higher education institute. Videos also catered for those who were more adventurous and demonstrated how to find new and interesting worlds.

In addition to this, multiple inworld training sessions were scheduled for students early in each semester of second year. Attendance was strongly encouraged and was limited to 20 students per session. To maximise student participation and highlighting the flexibility of the platform, some of these sessions were delivered at night and at weekends. Delivered by the nursing discipline virtual lead, users met at the courtyard of Interaction Island and rehearsed skills such as communicating through their avatar, walking, sitting and flying.

By their request, staff received a face to face group training session to learn the skills that were needed to deliver the course content. With a shared screen at the front of the class, the virtual lead demonstrated what keyboard buttons to press and the staff followed along with their individual computers. In addition to the skills taught to students, staff were also

given instruction on how to share a notecard with another avatar. Essentially, this is the passing of pre-written text and was integral to one of the planned virtual assessments.

When a user signs into SL for the first time, an array of avatars are available for free and immediate utilisation. All staff and students were given these initial instructions and in the training sessions that followed with the virtual lead, users were shown how to alter the appearance of the avatar if they wanted to personalise it. This was done by either applying a different outer layer, referred to as the skin, or changing the clothes of the avatar. The skin is the outer graphical texture of the avatar that gives shape and colour.

Users were shown how to manipulate their individual avatar's graphic skin options or where to purchase a new skin and apply it to their avatar. In addition to this, all users were shown various virtual clothing shops where they could purchase clothing to further individualise their avatar.

5.4.3 Pain assessment.

The pain assessment was a course requirement where students, as nurse avatars, would simulate a pain assessment with a virtual patient. Upon entering the virtual community medical centre, as a nurse avatar, students were given a virtual notecard that presented a patient case history. Students had prior knowledge that they would be conducting a pain assessment, however, were unaware of specific information about the patient such as past history or medical diagnosis.

An academic operated the patient avatar and role-played this character for the entire assessment and was marking the performance of the student. Each patient avatar was created to portray the associated social history. For example, an academic was in character as a patient avatar, who had a social history of being in a biker's gang (see Figure 3). The virtual patient, who had chronic pain following a motorbike accident some years previously, was presenting for assessment and treatment at the virtual clinic.

When the student completed the pain consultation of the patient, the academic would state *simulation end*. At this point, the academic provided immediate feedback to the student in SL. To complete this phase of the simulation, the academic would change the appearance of their avatar to their own customised avatar. This avatar more closely represented their real-world self.

The virtual pain consultation was a compulsory formative assessment. This meant that it did not carry any weighting towards final grades for the course. The purpose of this assessment was to provide students with an opportunity to rehearse the skill of conducting a pain consultation and receive immediate feedback. The formative pain consultation rubric (see Appendix K) provides the criteria that students were assessed against. The feedback corresponded with the marking rubric and generally related to the way in which the student posed the questions, the quality of the questioning and whether the recommendations from the consultation were appropriate.

Figure 3 illustrates a 'back room' in the medical centre where patients would be housed if there was an overflow. In real terms, initially this was rarely used for student assessments of patients and as such, underwent some superficial improvements to make the area more amenable for patient consultations to be conducted by students. When students were not in this area, it served as a private space for academics to speak.

Other noteworthy inclusions in are the green sound waves above each avatar. These indicate that both avatars are speaking in real time. The SL platform has a locality map indicator insert. This can be utilised by the operator to illustrate if virtual friend avatars (green dots) or unknown avatars (yellow dots) are near. The map insert in this picture has many yellow dots. These indicate that students are in the virtual area and most likely preparing for their assessment or have completed it.

Figure 3. Academic-as-patient avatar (blue denim), who was depicted as a member of a biker gang, speaking with another academic (white/red), during a break between pain assessments.

5.4.4 Home and safety assessment.

A primary care course offered in first semester of the second year BN program gave students the option to choose SL or real-life to record two simulated patient consultations. Students were required to record interactions with a partner actor-patient. They were given the option to complete the assessment with an actor-patient in real-life (usually a peer, friend or family member), or with an avatar patient in SL (again, usually operated by a peer, family member or friend). The realism of the virtual simulations were enhanced by increasing the realism of the patient's 'skin'.

To achieve this, students were given instructions by way of a video clip that demonstrated how to change the look of an avatar to resemble, for example, an older male. This avatar would be operated by their peer. Figure 4 illustrates a clip from a resource where the students are given instructions on how to purchase a new avatar 'skin' and then how to

apply it to their own avatar. This information was to assist students to develop a more personalised avatar for their assessment.

Figure 4. Video demonstrating how to make an older male avatar for use in the home and safety assessment

Students in prior iterations of the primary care course had commented that they were unable to achieve a realistic medical centre setting using their own home or on-campus laboratories. Virtual interaction in SL were constructed as a way of overcome this deficit, such that students were given virtual dwellings where they could undertake this activity. Additionally, the academic team reasoned that the use of SL as an option might reduce predicted student anxiety in second semester, when the use of the virtual world was compulsory.

The assessment objective was to demonstrate the ability to conduct a comprehensive evaluation of a community based client in their home, in order to determine the level of hazard and risk within that environment. Students were also required to conduct a patient consultation in a medical clinic. For additional information regarding the assessment, refer to Appendix L. The associated assessments for these simulations were compulsory and

weighted. This course averaged enrolments of 200 during this research. Of this, an average of 55 students chose SL to complete the assessment.

5.4.5 Global citizens—International healthcare.

Students enrolled in a conversion program completed a course focussing on the Australian healthcare system. As part of a compulsory graded assessment, with a weighting of 20% of their final grade, students were required to utilise SL.

The initial planning for this assessment had conversion program students paired with students from another international higher education institution. It was anticipated that the alternative experiences of health and healthcare would be a learning experience for the students and the questions for each group were used to stimulate discussion of shared, potentially alternative experiences.

Conversion program students were introduced to the assessment by an informal presentation on Interaction Island from academics from the joint institutions.

Students worked in small inter-disciplinary/ international groups examining course content and prepared a presentation to be delivered in SL. Learning objectives for this virtual assessment aligned with course objectives focused on the gaining of a broader understanding of global health and healthcare systems. To review the assessment document describing the possible presentation topics, refer to Appendix M.

Student groups and meeting times were established for all learners with the presentation of the assessment occurring in the boardroom at Interaction Island during pre-determined dates. Figure 5 captured a moment when students were gathering in the boardroom getting ready for their presentations. The female avatar at the head of the table is working the PowerPoint presentation and is attempting to find the correct assessment to present. Some RN

conversion students' avatars are dressed in nursing scrubs and the international students are plain clothed.

Figure 5. EN-RN conversion assessment presentation in boardroom on Interaction Island.

5.5 Participants

5.5.1 Undergraduate nursing students.

Undergraduate nursing students sought for this research were enrolled in the specific courses that utilised SL in either the undergraduate BN or conversion program. Participants were initially invited to participate in the research via an email that included an Information Statement (see Appendix E) and Informed Consent (see Appendix F). As per ethical guidelines, informed consent was assured through the provision of explanatory statements to the informants regarding the intention of the research, its expected outcomes and participant and researcher obligations.

They were informed that their participation in SL activities was a course requirement however; participation in the research was voluntary. Participants were informed that they would able to withdraw consent before, during or after being interviewed and were given instructions on how to opt out of the research if they did not wish to be observed during observations of specific occurrences during the research—for example a virtual training session.

Adhering to the ethics endorsed research protocol, students were advised, in the Information Statement, that the researcher would be making field notes and observing avatar behaviours inworld. Students were also advised that the researcher may also take notes of naturally occurring interactions and conversations. These may or may not be outside the virtual space. Additionally, students were advised that the researcher may possibly take photographs of inworld interactions. If students did not wish their interactions to be noted or captured, they were advised to notify the researcher.

5.5.2 Higher education academic staff.

These participants were all RNs who had achieved at least the level of Masters in tertiary qualification and were employed by the higher education institution in either a full time or casual capacity. The length of time employed as a higher education academic ranged from one to twelve years. Most of them had completed their initial BN (or equivalent) in a tertiary education setting. Some had completed their initial education within the 'apprentice style' hospital training.

The recruitment of higher education academics occurred via an invitational email (see Appendix C) that included a participant Information Statement (see Appendix G) and Informed Consent (see Appendix H). Academics were also advised that the researcher would be making field notes of naturally occurring interactions between staff and students on-campus or taking photographs of inworld interactions. Academics were advised to inform the researcher if at anytime they did not want these interactions noted or recorded.

5.5.3 Clinically practicing Registered Nurses.

Clinically practicing Registered Nurses (RNs) varied in their experiences, years in the profession and employment status. At the time of the research, all of the RNs were employed within the same health district. The health district spanned 11,335 square kilometres and had an estimated population of 211,000 residents (NSW Government. Service NSW, 2019). Whilst being employed by the same organisation however, they worked in varied specialty areas such as orthopaedics and emergency.

The RNs also represented a cross-section of previous work experience. Prior to their current employment, some had worked in rural and remote nursing, whilst others had only worked in regional or metropolitan hospitals. Most of the RNs had completed additional

higher education qualifications ranging from a specialty postgraduate certificate and extended to a Doctor of Philosophy.

RNs were invited to participate in the research via email (see Appendix D) that included an Information Statement (see Appendix I) and Informed Consent (see Appendix J). They were invited to view SL with the researcher providing a virtual tour of the teaching spaces and a short presentation of its use in the BN.

5.5.4 Overall recruitment.

The inclusion of these three groups via purposeful sampling was also based on each participant's ability to provide detailed descriptions about their experience and perceptions of interacting in a virtual world, and the ability and willingness to discuss experiences specific to nursing practice. Following the process, 24 recruited participants were included in the research. The three groups were represented as: 11 undergraduate nursing students; 8 higher education academic staff and; 5 clinically practicing Registered Nurses.

5.6 Approaches Utilised for Data Collection

This research sought to investigate the nature of learning when utilising the virtual world of Second Life (SL). In order to achieve a deep level of understanding, the researcher utilised multiple approaches of data collection including interviewing, participant observation, and documentation of field notes, memos and the examination of relevant artefacts. Undergraduate nursing students, higher education academic staff and clinically practicing Registered Nurses all participated in this methodology.

The structure of the higher education calendar dictated the timeframes for data collection that actually occurred during defined educational teaching periods. The time commitment required to conduct a focused ethnography, as described by Higginbottom et al. (2013), can be shortened and completed in staged intervals, as opposed to long-term immersion. Rather than present a superficial image of the subculture within a short time frame, Knoblauch (2005) presents that, the intensity of the data collected overcomes this possible limitation.

This research incorporates collection strategies that utilise technical aids in the form of voice and video recording equipment, pictures of the physical environment being studied and participants learning within the environment. These, together with the traditional creation of field notes and collection of artefacts, has resulted in a comprehensive amount of data collected in a defined period.

As suggested by Higginbottom et al. (2013), this research relied on purposive sampling. Snowball sampling was utilised with research participants acting as recruitment agents, encouraging peers or colleagues to take part in the research. Following each interview and also the observation sessions, participants were encouraged to speak about the research with peers. Further participants who were interested in the research were asked to contact the

researcher via the initial communication that was sent to all potential participants (see Appendices B, C & D).

The ethnographic nature of this research dictated that the sampling was contained within the higher education institution and associated health district. Participation was not dependent on age, gender or vocational specialty (for example acute or aged care nursing, academic scholar or researcher).

5.6.1 Informal interviewing.

The researcher did not have any predefined questions prior to the informal interviews conducted during this research. These generally occurred immediately after sessions of participant observation. This enabled the researcher to clarify the intent of a behaviour or communication from the participant.

Informal interviews were conducted with undergraduate students most often at the end of a SL session whilst still in the virtual world and other times after classes on-campus. The researcher engaged academics in informal interviews at many times across the research and would often involve walking to buy a coffee given the relaxed nature of this type of data collection.

Content of the informal interview was captured as researcher field notes. Verification of these did not always occur. The informal nature of the interview sometimes dictated that the researcher did not have contact details of the participant. Where this was possible, and warranted for clarity, the researcher would share a synopsis of the interaction with the participant for the purpose of verification.

Extending beyond a conversation there was a focus to the discussion though Robinson (2013) admits to the ease of straying off topic given the relaxed nature of discourse. It is recognised that this immediacy can potentiate greater accuracy in data collection.

Additionally, the participant is potentially more aware of an incident specific to the researcher enquiries given the timing (Fontana & Frey, 2005).

5.6.2 Formal semi structured interviews.

The formal interviews used in this research were semi-structured meaning that the researcher generally had a commitment to an area of focus and planned questions accordingly. Appendix N are the guides that were used to provide order to the interviews. A formal interview provides an opportunity where the researcher can probe for specific content with predetermined questions. The interviewer remains flexible, however, and allows for story telling (Streubert & Carpenter, 2011).

The researcher was cognisant of an ecology of learning framework where each participant is exposed to a "broad spectrum of learning situations" (Siemens, 2008, p. 8). As such, the researcher remained open to branch away and consider new perceptions and directions during the interviews. This diverging technique is validated in the formal interview given its semi-structured nature.

For example, leading from the introduction, the researcher asked "*Can you tell me about your experience using SL?*" The intent of this question was to generate engaging conversation that would encompass their previous experiences with technology and education, their support networks and their inworld interactions. Further to this, the researcher was able to begin exploration of the participant's microsystem in their ecology of learning.

Other questions acknowledging the wider systems of the individual's ecology of learning and the study's focus included, "*In what way did the use of SL in the curriculum influence your learning / influence the way you teach?*" Finally, the research investigated the transferability of the virtual learning with an interview question such as *"How do you feel the use of SL is helping [you] to assist students to develop the skills required for a career in nursing?"*

These broad questions served as a starting point for the researcher to understand the uniqueness of the participant, their experiences and ultimately began to give shape to the ecology of learning. These formal questions were answered differently for most participants and so the researcher was primed to ask 2-3 follow-up questions in order to investigate new directions that may have been seemingly tangential to the focus of the study. This generally enabled a deeper understanding of the influences and experiences of the participants. Acceptance and consideration of wider interconnected associations between the individual and their experience of learning is in keeping with the conceptual framework of the research.

After agreeing to an interview, the participant would identify their preferred method to speak with the researcher and a time and date would be agreed. Students favoured the use of the telephone or inworld as their medium of choice. Academics nominated either phone or skype as a method for speaking with the researcher and all clinically practicing registered nurses opted for face to face interviews.

Formal semi-structured interviews with students ranged from 15 to 50 minutes, and 20 to 60 minutes with academics. Interviews with RNs typically lasted 30 minutes. Written consent was obtained prior to the commencement of all interview which were recorded and later de-identified and transcribed by the researcher. Transcriptions were shared with the individual participants to verify the accuracy of the transcription.

5.6.3 Convergent interviews.

Convergent interviews require a participant to contribute to a series of in-depth interviews which can possibly offer a superior qualitative data collection method to meet the needs of this exploratory social enquiry (Rao & Perry, 2003). Higher education academics were the only group that contributed in convergent interviews, despite invitations to the student and nurse participant groups. As recommended by Dick (2016), with each ensuing interview, the researcher structured questions that essentially delved contextually deeper, to

converge on the issues at hand The recorded interviews were conducted on the phone, transcribed by the researcher which were later shared with the participants to verify the accuracy of the transcription.

5.6.4 Unstructured observation.

To gain a deep understanding of how students and academics interacted within the virtual world environment, the researcher utilised unstructured observations of the participants in their roles as they pertained to utilising SL. As such, observations occurred during planned undergraduate virtual learning sessions, SL training sessions with higher education academics and on-campus (real-life) wherever opportunities for the collection of research data presented itself. The observations included research participants as avatars during times such as when they were navigating to participate in the virtual world and negotiation of their time to participate in the virtual world.

The unstructured observations performed in this study yielded rich data that is synonymous with ethnographic research and were recorded as detailed field notes. Review of these created the opportunity for the researcher to understand the existence of the participant within the cultural context and the natural context in which it occurs (Mulhall, 2003); the researcher can see the macro from within the micro. That is, the researcher had the perspective of those were learning using a virtual world and could view this from the viewpoints of nursing, academia and education.

5.6.5 Field notes.

The researcher followed Yin's (2016) recommendations for documenting when recording observations. This included noting the date, start and conclusion times as well as writing down what was being seen and heard during the observational process. This was a

free-flowing process where these sources of data were preserved in the form of researcher writings.

Hand written field notes of virtual observation for example, captured the behaviours of avatars (movements), interactions with others and the manner and content of these (speech or text chat) as well as the representation of the avatar (humanoid or other). Field notes of observations in real-life captured similar content though were able to capture emotions more readily via observation of gestures (facial expression and body language). Field notes also reported on occurrences or observations within the wider ecological systems of the ecology. For example, news reports of understaffed local health facilities were recorded in field notes. This topic was also discussed at a staff meeting and again, documented as field notes.

Cruz and Higginbottom (2013) describe the various ethnographic researcher roles. According to these description, during this study, the investigator was most often in the researcher-as-observer role though did shift to the more conventional researcher-as-participant for short periods.

Allowances were made for the documentation of researcher thoughts and feelings during the fieldwork. Aligning with suggestions by Russell (2013), and any further researcher reflections were noted after the period of observation in the form of memos.

5.6.6 Researcher reflections.

The researcher for this study shares valuable, unique perspectives as reflections within this thesis and having experience within higher education and undergraduate nursing conforms with ethnographic conventions. The autobiographical quality of researcher reflections promotes transparency and therefore validation to research (Higginbottom et al., 2013). Cruz & Higginbottom, (2013) furthered this and suggested that self -reflection in the form of reflexive commentary is growing in acceptance and indeed is seen by many as a necessity to this type of social enquiry.

5.6.7 Examination of Artefacts

Examination of artefacts added to the research by providing another layer in the collection of culturally relevant data. Contemplation of an object's relevance within the culture as well as its impact to the individual's ecology of learning determined their inclusion as research data. Artefacts were: student academic and clinical results; formal and informal feedback on courses; course assessment requirements; academic workload model; and photographs.

The researcher has made assumptions about the influence these artefacts have on participant learning, the meaning participants place on these and how the object gives meaning to the culture. Consideration of *if* and *how* these artefacts had an impact on learning experiences has occurred through researcher analysis of interview discourse and participant observations. Open discussions with the participants in these forums served to validate researcher assumptions. In this sense, the process of the researcher's consideration of an artefact within the macro and micro environments of the study yielded the generation of data that is ultimately shaped by the researcher. Pole and Morrison (2003) suggested that given the responsibility of the researcher, the process of data generation in this way aligned with a social constructivist perspective.

Ramduny-Ellis et al. (2005) recommended that each artefact be considered from the perspective of the 'designer' and 'user' also. This meant, for example, that the learner or course evaluation tools that were considered as artefacts in this research, embodied the explicit expertise and assumptions of the designer of the tool, being the higher education organisation. Gaining an understanding of the assumptions of the wider ecosystem provides insight into the culture of learning and the learner's experience within it.

Student academic and clinical results.

Student grades and feedback were reviewed for the assessments that utilised SL. For example, the researcher examined the virtual formative pain assessment results and feedback. This was useful to provide a deeper understanding of the virtual experience and highlighted aspects for questioning participants.

Students attended clinical placement after the theoretical on-campus and virtual learning component of the course involving the pain assessment. The researcher reviewed facilitator comments about the performance of the students. The completion of clinical experience with a successful outcome acknowledged student learning and competence. This can infer the successful integration of knowledge from prior learning.

Formal and informal feedback on courses.

Formal feedback was obtained from the institutionally conducted questionnaires- Student Experience Questionnaire and was examined for the three relevant courses. Informal student feedback was captured via associated virtual discussion forums in the learning management system of the courses using SL. Students could express concerns, questions or general feedback.

Course assessment requirements.

Individual course study loads and assessment requirements for students were considered as important artefacts in this research. Appendix K for example, is an information guide for the second year course that required students to complete the pain assessment. This is a double-weighted course and although students have four assessment items, only two of them are graded (each have a weighting of fifty percent). The additional two assessments (a simulation and a numeracy exam) require the demonstration of mastery. The simulation was a formative assessment and as such, utilised as an opportunity to provide students feedback prior to the summative assessment.

Academic workload.

Just as individual student workload was important to assist in understanding the experience of undergraduate nurses within the curriculum, the workload of the higher education academics who were delivering courses that utilised SL was a focus also. For example, the amount of time an academic can invest in innovative teaching strategies such as SL and the time allocated to marking assessments (and therefore the provision of feedback) can all effect the experience of learning in SL. Appendix O is an excerpt describing the higher education institution's workload model for academic staff. It denotes, for example, that during the time of this research, each course would have as a norm, sixty minutes of marking time per student, per course.

The course that had delivered the formative pain assessment has four other assessments that require grading—equating to fifteen minutes per assessment task for the assessor to grade and provide feedback. There is no workload allocated for conducting formative assessments or the provision of feedback. There is however, an allocation of time for course coordinators to develop new innovative teaching and learning resources. The use of SL would meet these requirements; however, there is no discernible time allocated to teaching teams who require upskilling to use educational technologies.

Photographs.

Just as interviews or participant observation can represent the culture being examined, so too can a photograph. Pole and Morrison (2003) asserted that the researcher selects angles and images that essentially frame the moment. Due to the array of potential images that are possible in an ethnographic study, the photographs taken and chosen are not arbitrary; the researcher decides what pictures to take and what images are framed out.

Researcher-selected photographs taken during this research are of learning events in SL and are what Scott (1990) describes as a natural portrayal. These include capturing first

meetings with students in SL, aspects of the 'physical' VLE, and classroom activities. All of the photographs were taken in SL, and selected photographs are included in chapter one, chapter five and chapter six of this work.

5.7 Analysis

Analysis of data commenced immediately after initial data collection. By being intentional and systematic in ongoing data collection and analysis, the researcher remained open to the investigation and examination of all cues that were relevant to the research. Data was collected and analysed in a cyclical manner. Collected data included observations, interviews and consideration of relevant artefacts such as course content and student results.

Analysis of this data would occur almost simultaneously as new data was then collected and analysed. The cyclical nature of the data collection and analysis as recommended by Corbin and Strauss (1990) enabled the inclusion and exploration of newly identified relevant information with ensuing data collection. Saturation of data is readily apparent using this cyclical approach. Saturation occurs when continued collection of data reveals redundant content (Polit & Beck, 2014). Saturation was considered as having occurred when new themes were not being revealed despite continued data collection.

Qualitative research does not privilege one methodological practice over another. Indeed, commonality of research strategies is predictable. It is the lens through which these methods are viewed, however, it is during interpretation and analysis that differentiates genre (Denzin & Lincoln, 2005). It is with this in mind that the analysis of this research has been completed. Just as the methods used and interview focus have an ethnographical foundation, so too has the analysis.

To guide the process of data collection and analysis, Yin's (2016) five phases of analysis for qualitative research were utilised. The phases are named compiling (1), disassembling (2), reassembling (3), interpreting (4) and concluding (5). Compiling involved sorting all of the collected data into an order that made sense to the researcher. When the data was disassembled (phase 2), the complied data was broken down into smaller fragments.

During the third phase, reassembling, the data was reorganised into groupings labelled as emerging themes, themes and categories. Interpreting the reassembled data during phase 4 resulted in the development of the research's unique narrative. Lastly and as the name suggests, the phase concluding, calls for conclusions about the research to be drawn.

These phases are described in a logical sequence though the researcher discovered as Yin acknowledges; the cyclical and non-linear approach to data analysis means that the researcher moved back and forth between phases. The participant groups were treated discretely in the compiling, disassembling and reassembling phases.

5.7.1 The compilation of the gathered data.

Despite acknowledging that data analysis commenced with the first data collected Yin (2016) cited the first phase of data analysis as beginning with the *compilation* of collected data. The collected data during this phase included data from field notes, researcher reflections, interviews and the collection of various artefacts. Initial analysis of the transcripts was accomplished by reading, re-listening and contemplation.

This assimilation of combined data is an important part of compiling the data according to Yin (2016). To achieve assimilation, it is important to get a genuine sense of connection to the participant and this was achieved by recollecting associated thoughts and memories of the interview. This sense of association was then strengthened by reviewing the field notes and archival data relevant to the interview.

With knowledge of contemporary literature, with the research question and aims at the fore (see Section 1.3.1), transcripts and field notes were analysed sentence by sentence for indicators relating to the nature of learning. When data was identified as relevant, it was initially highlighted. This allowed the researcher to move through the transcript with a sense of continuity and allowed the collective findings to be realised. This process was repeated until the researcher was satisfied that all data was captured.

The highlighted sections, words, whole sentences or part of sentences were transferred to a table for preliminary coding. To strengthen validity to the research process, each statement or word listed in the table was then expressed using researcher's own words (formulated meaning) and crosschecked with the research supervisors.

5.7.2 The gathered data is disassembled.

Data was then coded and classified as per the second phase of Yin's (2016) research analysis, disassembling. This process was completed in consideration of the research questions. Concepts or clusters of codes (Yin) were identified, compared over time and grouped before establishing emerging themes. By way of auditing, the supervisory team reviewed raw data sets and established concepts that were then compared with the researcher's analysis. Results were discussed and reviewed for consistency.

Table 1 demonstrates an example of the initial coding of a student interview. This represents the collation of the initial steps in the phases of analysis where individual data was reviewed for meaning and concepts were grouped into emerging themes. Statements are coded and correspond with a participant group, individual participant and statement number. For example, student statements are coded all beginning with the letter S. Each participant is assigned an alphabet letter. Each statement is then numbered. The example in Table 1 demonstrates five statements from student 'A'. Academics and RNs are coded in the same manner though use the letter 'A' and 'N' respectively as the participant group identifier.

Table 1. Preliminary coding of student interview data. Demonstrates the collation of the initial steps in the phases of analysis where individual data was reviewed for meaning and concepts were grouped into emerging themes.

Participant / FM number	**Significant statement**	**Formulated meaning**	**Concept**	**Emerging themes**
SA1	It just seemed like it was going to be much easier than having to film it. Context: The student is referring the thoughts that using SL would be easier to use in an assessment than real-life film alternative.	SL was perceived as being easier to use for an assessment than using real-life filming.	SL was an easy alternative for the assessment	Easy road is the one students travel
SA2	I am a nerd! I am a 50 year old nerd. I don't game now but…I don't know—what do I play…. I guess not much so much anymore really.	The student is a self-titled 'nerd' or geek and is 50yrs old. The intention of this statement is portray self as being computer savvy.	Older age and enjoyment of computer use; being tech savvy.	What's age got to do with it? Have you ever…..?
SA3	I am not frightened at all. I have always had computer. I do all my own bookkeeping with my own businesses.	The student is not scared of computer use.	Prior exposure to computers made participant not scared to use SL	Have you ever…..? I'll keep a few of my favourite things handy
SA4	I tried to get them to use it for the Sim and they just would not use it at all. They were my age and they just said no. Context: Them and they is referring to friends on-campus).	Despite the student's encouragement to peers, they would not volunteer to use SL. The peers were the same age *(SA2-50)*	Peers refused to use SL despite encouragement	No means No!

Participant / FM number	Significant statement	Formulated meaning	Concept	Emerging themes
SA5	Yes well, the learning outcomes were researching and finding out what to do and say. I felt it didn't matter whether you used Second Life or real-life.	The student states that the learning outcomes were centred on interview questions and that these could be achieved regardless of the simulation style used for the assessment.	Learning outcomes for the assessment were achievable in SL or real-life	Same difference

5.7.3 Reassembling the gathered data.

The reassembling of the data was conducted in two steps; the participant groups were reassembled discretely (themes) and then considered as a whole and reassembled in a way that represented the entire data set. By employing techniques supported by Corbin and Strauss (1990) such as triangulation, open, axial and selective coding of concepts, emerging themes and themes the data was further assembled into categories. This documented cyclical approach assisted in establishing an audit trail. Open coding involves initial questioning of the data and results in concepts being identified and is demonstrated in Table 1 This process used methods of induction, deduction and verification.

Once an emerging theme was conceptualised, the associated data were collated and represented in a table such as Table 2. Completing this allowed for further contemplation and cross checking that the reassembled data was accurately represented by the emerging theme. This process was consistent with the cyclical nature of data analysis (Yin, 2016).

Table 2. Excerpt from academic emerging theme and associated data. Demonstrates theme with associated collated examples of statements.

Participant group: Academic Emerging theme	**Statement codes**	**Statement examples**
It's not all academic	A-A-5; A-C-12; A-A-7; A-A-9; A-A-10; A-C-21;A-F-2: A-G-10	(A-A-5) I was confident that the scenario would be a valuable one for the students. Well I thought it would be valuable. (A-C-12) They said they learned things. It was a positive learning experience and I was happy about that. (A-A-7) They were really frightened about the technology. (A-A-9) I feel for those that were really nervous or they had trouble getting in…. (A-A-10) In this environment it gave me confidence to think wow, I did my work and I followed this format and I actually got it. (A-C-21) Part of the problem with the chronic illness unit was the enormous amount of workload that they had. … I mean to add SL on top of this massive amount of learning they had to do. (A-F-2) what we needed to prepare students before they came into it so they weren't half way through 2nd year and we say here is another mode of learning which was a technical mode perse. (A-G-10) I think knowing SL—and being able to explain it to them, they felt more comfortable I think when we got in there together, they were so much more relaxed—they could concentrate on the pain assessment rather than concentrating on how to sit there moving your arm.

Participant group: Academic Emerging theme	**Statement codes**	**Statement examples**
Learning on the hop	(A-A-12) (A-B-2) (A-B-26) (A-C-21) (A-C-22) (A-C-8) (A-F-5)(A-A-17)(A-A-15) A-A-14)(A-D-8)	(A-A-12) we were time poor so you know we had to basically have to acquire these sorts of skills in short space of time. (A-A-17) We didn't have enough permanent staff who had the time. (A-A-15) Although in the end we all worked outside of our workloads. (A-C-21) Part of the problem with the chronic illness unit was the enormous amount of workload that they had. … I mean to add SL on top of this massive amount of learning they had to do. (A-D-8) I learn pretty quickly. I only needed that one time with you and picked it up. Context: 'that one time with you' refers to a training session conducted by the researcher.
Kindred spirits	(A-A-1) (A-A-2) (A-F-3)(A-B-4) (A-E-22) (A-F-29)(A-C-8)(A-C-9))(A-E-21)(A-E-3)(A-G-2)	(A-C-10) Yes oh way faster for me. Much faster to have someone help me and then when they see you're clicking on the wrong thing you were able to help problem solve things in a hurry. ….It minimised frustration so I think if I have to follow screen shots and I do what I can I can follow screen shots steps and I can follow little video clips steps but sometimes you just you know you have to watch it two or three times at least I do before I'm catching it. (A-C-6) I wasn't resistant to learning it. I actually was interested in learning it but having the support to learn how to use it was really important. (A-A-1) That's how the confidence was built really it was being guided by yourself.

Axial coding resulted in identifying a theme and linking it to the related emerging themes that were identified during open coding (Corbin & Strauss, 1990). During this phase, reassembled data is represented as an illustrative array in the form of a concept map where each participant group theme and emerging themes are represented by a colour scheme.

The reassembled data pertaining to the undergraduate nurse participant group identified 23 emerging themes and seven themes (see Table 3). The reassembled practicing RNs data identified 33 emerging themes and eight themes (see Table 4). Reassembled data pertaining to the academic participant group identified 31 emerging themes and seven themes (see Table 5). The complete results are also presented in table format (see Appendix P: Complete results from the data gathering).

Table 3. Student complete results. Data analysis presenting emerging themes, themes and categories.

Emerging themes	Themes	Category
Get out the putty and fill the gaps	The potentials of learning in SL	Experiential learning can be virtual
SL—what is it good for?		
There is nothing like pretend learning		
Practice makes perfect		
Where are the real patients—let me at them		
Have you ever…?	Learning in SL is *nioce;* it's different	What influences adoption of technology for learning
Green eggs and ham		
Second what now?		
I'll keep a few of my favourite things handy		
Technology is the new black		
This is not up to scratch		
With a little help from my friends		

Emerging themes	Themes	Category
An easy road is the one a student travel What's age got to do with it? Dib dib dob dob Tell me why and I might follow Relax—no one is looking at you No means no First impressions were wrong! SL is like a pair of jeans—it takes some getting used to	Learning requires preparation	What influences adoption of technology for learning
What's age got to do with it? Same difference Virtual learning is fun for everyone Easy peasy Look into my eyes Love the virtual learning SL—Oh are we meant to be learning? Virtual world opens up the real-world I am a virtual visionary	Comparing SL to traditional learning	Technology enhanced learning: SL in practice

Emerging themes	Themes	Category
Relax—no one is looking at you My real self gets in the road of my learning sometimes Does my avatar bum look big in this? Love the virtual skin you are learning in SL is like a pair of jeans—it takes some getting used to Tell me why and I might follow I'll keep a few of my favourite things handy Virtual learning is fun for everyone Love the virtual learning SL—oh are we meant to be learning?	The emotional rollercoaster of learning in SL	Feelings are important when learning in SL
A virtual nurse is a naughty nurse Love the virtual skin you are learning in Relax—no one is looking at you Does my avatar bum look big in this? My real self gets in the road of my learning sometimes	Looks are important for effective learning	Looking good sister!

Table 4. Practicing RN complete results. Data analysis presenting emerging themes, themes and categories.

Emerging themes	Themes	Category
The ward was too hot so she got out What is the agenda of nursing education? Trust me you're not a nurse Graduates are like a box of chocolates	The young of nursing	Contemporary nursing: impetus for change
I feel connected in the real-world The wandering star of nursing What's the agenda of nursing education? It's virtually all about the outcomes Watch me and learn from my mistakes	Evolution of nursing: Culture of learning: community of practice	Learning is virtually connected learning
Please Sir, can they have some more please? Virtual learning with practical benefits I know just what they need	More experiential learning	Experiential learning can be virtual
Patient safety before student learning Don't let the children near her she is old and she bites I see some over here Richard I'm too busy to be nice	A short staffed day keeps the nice nurse away	The needs of learning in contemporary nursing education

Emerging themes	Themes	Category
This spread does not equal quality Virtual learning—yeah right! Virtual learning with practical benefits Nursing is practical; ipso facto 'Appy students like to learn in virtual platforms	Changing curriculum	The needs of learning in contemporary nursing education
Virtual learning is not stressful—virtually Virtual learning is a little more real than real-life learning Watch me and learn from my mistakes I'll learn more if you teach me virtually Patient safety before student learning Games are not fun but serious games are useful Ain't no mountain high enough Possibilities are endless 'Appy students like to learn	Virtual learning	What influences adoption of technology for learning
You can take the hospital out of the education… Is this EBP? Nerds and nurses don't mix	Is the technology good and are the people good enough?	Technology enhanced learning: SL in practice

Emerging themes	Themes	Category
Virtual learning is not stressful—virtually	Learning in SL—emotions	Feelings are important when learning in SL
Excited to learn		
I'm too busy to be nice		
Games are fun but serious games are useful		

Table 5. Higher education academic complete results. Data analysis presenting emerging themes, themes and categories.

Emerging themes	Themes	Category
Did they learn anything? Yes they learned—not sure what though! Did they learn just because they liked it?	It's virtually all about the outcomes	Contemporary nursing: impetus for change
Do you sense a connection? What motivates you to learn in SL? Kindred spirits	Learning together is better	Learning is virtually connected learning
Did they learn anything? Yes they learned—not sure what though! Did they learn just because they liked it	It's virtually all about the outcomes	Experiential learning can be virtual
Learning on the hop That's the sound of the man working on the chain gang	Who's got the money?	The needs of learning in contemporary nursing education
It's not all academic Whatever the diagnosis I'm shaking Did they learn anything? Yes they learned—not sure what though! Can we change the future? Do you sense a connection?	Learning in SL	What influences adoption of technology for learning

Emerging themes	Themes	Category
Kindred spirits	Working in SL	Technology enhanced learning: SL in practice
Learning on the hop		
What was all the fuss about?		
One apple for and orange		
What motivates you to learn in SL?		
Rolling out technology is like a bottle of wine		
I know nothing about it but I have my thoughts		
Technology bugs me		
Technology glitches		
Did someone say this would be difficult?		
Formative assessments make me stressed	The hormones of learning	Feelings are important when learning in SL
Technology bugs me		
What was all the fuss about?		
A sense of pride		
Did they learn something just because they like it?		
My avatar thinks and looks like me	Working in SL	Looking good sister!
My avatar lets me be who I want to be		

5.7.4 The interpretation of the data.

Once the participant groups had been discretely reassembled into this array, the data (themes) were reassembled as one data set by means of selective coding together with data source triangulation. Selective coding was completed as a means of validating a nominated category through contextualisation.

As an ethnographic research, it is important that relationships between all of the data sources be considered so as to offer a genuine representation of the culture being studied. Accordingly, this research incorporated processes that involved considering all data sources that related in some way. During this final phase of analysis for example, field notes, participant observations, artefacts and interviews were all again considered for their relevance and relationship to the category as they emerged. Deegan (2001) suggested that this process in ethnography is not explicit although the diversity of collected data enables multiple perspectives to be contextually understood.

The interconnected nature and depth of this data is clear when considering the links between data sets. Some emerging themes, however, are associated with only one theme, for example, the practicing RN emerging theme 'Graduates are like a box of chocolates' is only associated to the theme 'The young of nursing' as represented in Table 4. Whereas the academic staff emerging theme 'Did they learn anything?' has associations to multiple themes ('It's virtually all about the outcomes' and 'Learning in SL') as represented in Table 6.

The voices of the participants are clearly represented across the research results with many categories demonstrating a fairly even presence. Table 6 for example, illustrates a category where all participant groups are represented. The student voice is represented in the theme 'The hormones of learning' and this has five associated emerging themes. The voice of the academics is dominant in this category and is represented in the theme 'The emotional rollercoaster of learning in SL' and its associated ten emerging themes. The practicing RNs'

voices can be identified in this Category by the theme 'Learning in SL –emotions' and the associated four emerging themes.

Table 6. Presentation of category: *Feelings are important when learning in SL*, featuring all participant groups and their associated emerging themes and themes.

Participants	Emerging themes	Themes	Category
Undergraduate students	Relax—no one is looking at you	The emotional rollercoaster of learning in SL	Feelings are important when learning in SL
	My real self gets in the road of my learning sometimes		
	Does my avatar bum look big in this?		
	Love the virtual skin you are learning in		
	SL is like a pair of jeans—it takes some getting used to		
	Tell me why and I might follow		
	I'll keep a few of my favourite things handy		
	Virtual learning is fun for everyone		
	Love the virtual learning		
	SL—oh are we meant to be learning?		
Academics	Formative assessments make me stressed	The hormones of learning	
	Technology bugs me		
	What was all the fuss about?		
	A sense of pride		
	Did they learn something just because they like it?		
Practicing RNs	Virtual learning is not stressful—virtually	Learning in SL—emotions	
	Excited to learn		
	I'm too busy to be nice		
	Games are fun but serious games are fun		

5.8 Embedding Rigor within this Research

5.8.1 Credibility.

Credibility has been established in this research through prolonged engagement, persistent observation, triangulation, peer debriefing and member checking as would be supported by Lincoln and Guba, (1985). Ethnography accepts the presence of multiple realities and as such, the onus is on the researcher to represent these multiple realities through the data that is collected and the way that it is analysed. Credibility is "confidence in the truth of the data and interpretations of them" (Polit & Beck, 2014, p. 539).

Data has been collected across four years for this research project demonstrating prolonged involvement within this culture. Observational data has been collected from within natural settings from multiple sources (observation, field notes, artefacts and interviews). The triangulation of data further adds to the credibility of this research. Treatment of the data in this way allows for comparison and confirmation of findings and adds to the depth of understanding (Higginbottom et al., 2013).

Peer debriefing occurred at regular interviews throughout the entirety of this research project with the research supervisors and research experts. Member checking also occurred by returning to various research informants to clarify or confirm findings during the process of data collection and analysis.

5.8.2 Transferability.

In qualitative research such as this, transferability refers to how readily the results can be applied across another community (Jensen, 2008). To achieve transferability this research has provided thick descriptions to the reader by providing accounts of the context of the research, full participant representation and the research design. This research has also utilised purposeful sampling to increase transferability. Participants have been chosen that represent

the purpose of the research and its design. The onus is ultimately with the reader to determine the transferability of the research.

5.8.3 Dependability.

This research has utilised audit or decision trails thereby affording an increased transparency and dependability. Descriptions of how concepts were shaped to themes and then aligned into categories is an example of a decision trail. By providing this methodological information, the likelihood that others could replicate this research is enhanced.

As described by Lincoln and Guba (1985) dependability refers to the constancy of the research data over time. Jensen (2008) offers the notion that a qualitative study is often required to be responsive to a changing research landscape and as such, methodologies such as audit trails and thick descriptions work to enhance dependability.

5.8.4 Confirmability.

Confirmability is expressed in this research through researcher openness about potential biases and with audit trails. Research supervisors and selected participants were asked to review phases within the data analysis phases to establish whether researcher interpretations matched their own. Whilst researcher perspectives are acknowledged as valued in focused ethnography, confirmability is concerned with ensuring the voice of the participant is represented in the research (Jensen, 2008).

5.8.5 Researcher as research instrument.

During this research, the role of the researcher moved between acting as an observer-as-participant or participant-as observer as recommended by Higginbottom et al. (2013). When in the role of observer-as-participant, there was opportunity for face-to-face discourse with

research participants. These interactions were typically brief and purposeful. Settings for these interactions included on-campus, inworld or hospital wards. Russell (2004) acknowledged that settings also provided opportunity for the researcher to compile an observational account that added to the richness of the data collected.

Much of the research involved acting as participant-as-observer demanding a greater time commitment and greater level of involvement from the researcher. Russell (2004) suggested that as a participant-as-observer, the researcher often has a duality of roles; that of the researcher and at least one other role. In most instances, this was acting in the role of researcher and educator.

This method of data collection affords increased familiarity with research participants where the establishment of trusting relationships is associated with increased data quality however it is recognised that being over familiar with the informants or being immersed in the culture can potentiate skewing of the data via loss of objectivity (Higginbottom et al., 2013). To decrease the likelihood of this occurring, the researcher employed the verification techniques as previously described such as triangulation, peer debriefing, audit trails and member checking.

5.8.6 Establishing rigor through trustworthiness.

In ethnographic research, making meaning and interpretation take precedence to explanation and testing theory in the analysis of collected data (Craig, 2009). Establishing the results as being trustworthy replaces the need to prove traditionally accepted constructs of quantitative research (LaBoskey, 2004).

Craig further explains that a study deemed trustworthy represents the reality now or as being ‘true for now’ (2009). These understandings are fitting as qualitative research reflects contemporary social realities. For example, this research has occurred during a unique and historical junction of technology, healthcare and education. It represents the lived experiences

of the research participants, as such results are an interpretation of their social reality. As individual or collective viewpoints and experiences can change for example through influence or the evolution of time it is predictable then the 'truthfulness' of the results will change also.

Analytical qualitative constructs that represent trustworthiness (credibility, transferability, dependability and confirmability) (Lincoln & Guba, 1985) are offered in focused ethnography to replace the conventions of quantitative analysis; validity and reliability

5.9 Summary

To investigate the nature of learning in a virtual world, this chapter has rationalised the utilisation of focused ethnography as the chosen methodology. In order to conduct this research, the virtual setting was the established course environments in Second Life.

Invited participants from one higher education institute, were undergraduate nursing students enrolled in courses that utilised SL, and also higher education academics who were teaching into these courses. Additionally, clinically practicing registered nurses from a nearby health district were invited to participate in the research.

The collection of data and its analysis was over a period of approximately 4 years. Data was gathered utilising participant observation, interviews and the collection of artefacts. In order to produce, as referred to by Yin (2016, p.12) as a "thick" data set, the researcher, created field notes, memos and transcribed 24 interviews.

Cyclical analysis was commenced immediately after data collection and compilation. Using the process of coding, from this, data was broken down to its most raw form, and then reassembled. Interpretation of the data allowed for conclusions to be made. The processes that were followed during collection and analysis have been argued to meet the criterions of credibility, transferability, dependability and confirmability.

Analysis of the data resulted in the generation of eight categories. These represent the contextual features of nursing and education, concepts associated with the utilisation of technology in an undergraduate nursing program and the affective perceptions of the participants.

Chapter Six: Results

In order to answer the research question 'What is the nature of learning in a virtual world', this study considered learning in the virtual world during a period where SL was being introduced to an undergraduate nursing program. Using the ecological learning framework to guide the research process ensured that the broad setting in which the research occurred, was explored in terms of influence and impact upon the experiences of the participant. Meaning was derived from the responses to the actual experience and provided understanding about the relevance and ultimately the transferability to contemporary nursing.

Following a comprehensive analysis and synthesis process, eight categories emerged. These were comprised of data assembled from participant interviews, researcher observations and reflections and outcomes from consideration of relevant artefacts. Direct quotes from participant interviews and researcher observations are included to personalise and contextualise the outcomes.

All categories represent collective and combined responses that in some way address the research question and by doing so, add further shape to an ecology of learning model as it pertains to undergraduate nursing students who are interacting in SL.

Ordered in a manner that works inwards from the outermost layer of the learning ecology, the initial categories presented are 'Seeking improved learning outcomes: the call to transform the Bachelor of Nursing', 'Does online learning have a place in nursing education?' and 'Experiential learning can be virtual'. These represent findings that pertain to the wider social and educational contexts that pertain to the research.

Categories that follow bring together findings that demonstrate the interconnectedness of the systems of the learning ecology, and those within them, and specifically relate to the

delivery of a nursing program using technology. These categories are 'Learning virtually is connected learning', 'What influences the adoption of technology?', and 'Technology enhanced learning: SL in practice'.

The final categories reflect the inner most system of the learning ecology and demonstrate the diverse affective reactions of the participants when in the virtual space. These are 'Feelings are important when learning' and 'Looking good Sister!'

In order to enhance the readability of the results, references to the clinically practicing registered nurses also include 'nurse', 'practicing nurse' and 'Registered Nurse (RN)'. Higher education academics are also referred to as 'academics'. Additionally, undergraduate nursing students are also referred to as 'students'.

6.1 Seeking Improved Learning Outcomes: The Call to Transform the Bachelor of Nursing

This category brings together the voices of the higher education academics and clinically practicing Registered Nurses in respective themes, 'It's virtually all about the outcomes' and 'The young of nursing'. There was a clear recognition and expectation amongst these participants that higher education institutions were expanding their content delivery methods via virtual approaches. In particular, practicing nurses held the opinion that virtual education approaches were proceeding at pace because of the ubiquity of the internet. Therefore, if students demonstrated improved learning outcomes, this was spoken of as being positive collateral.

The clinically practicing Registered Nurses recounted examples of working with nursing graduates from higher education institutions. They highlighted that the novices were unable to meet the expectations of being practice ready, when they reflected on what they considered were the inadequacies of graduate nurses, and this particular discourse intensified. The RNs readily listed the areas where graduates were lacking, for example, time management and communication ability, and also emphasised their inability to enact higher order thinking.

A typical comment: *"*Struggle with time management, struggle with communication and who to go to, is a big one also" (Nurse A). A broad and unreserved representation of a practicing nurse's opinion of contemporary nursing graduates was described: *"*What reassures me is that there are some good registered nurses on the wards. What really frightens me is that there are some bloody disaster nurses on the wards" (Nurse B).

This aligns with the work of Hartigan, Murphy, Flynn, and Walshe (2010) who explored the attitudes of the RNs towards graduate nurses and revealed similar perceptions

about their lack of skills. More recently, a systematic review conducted by Missen et al., 2016), supported the view that critical thinking and technical skills are also areas of concern.

In contrast, RNs did, in a more supportive and beneficent sense, actually express concern for novice graduate nurses. They recognised that some graduates do "not have the capability to be able to function well in a nursing environment" (Nurse B). Given the high-stakes nature of the profession however, there was understandably little tolerance for poor performance, a finding that was also well supported in the systematic review conducted by Freeling and Parker (2015). Nurses interviewed during this current research, albeit in a protective manner, shifted blame for poor performance, from the graduates to the higher education organisations, and in doing so, demonstrated the interconnectedness of systems within a nursing student's ecology of learning.

Some nurses extended this narrative, implying a motive for financial gain, bluntly focussing on the expendability of the student to the higher education system. Several levelled the accusation against the higher education institutions stating vested interest in, "bums on seats" (Nurse C). The nurses considered how else they could explain why these institutions allowed some students to pass their first year, when they clearly lacked the wherewithal to progress, perhaps ever, to be professional nurses. A particular RN (Nurse B) in this discussion shared that she was "horrified" *at* "how bad[ly]" a graduate nurse had performed during a recent shift.

The details in comments, such as those above, were unable to be triangulated. However, a review of the academic course results and clinical feedback did reveal that students were meeting the pass requirement for both the theoretical and clinical requirements of their placement.

Higher education academics, however, were adamant that by incorporating SL into the curriculum, students would be able to rehearse areas of nursing that required attention, thus improving the quality of the nursing graduate. Students would be able to "practice the

knowledge around the skills" (Academic D). The 'knowledge around' the skills refers to those (in)abilities highlighted by the practicing nurses who were interviewed for this research. Specifically, academics addressed professional attributes, such as communication, time management and clinical reasoning skills, which support decision making in practice.

Academics particularly supported using SL to challenge accepted teaching practices. A particular academic commented that the impetus to use this platform was to consider its application from a teaching and learning perspective. Exploring the potential of using SL as an interactive simulation tool that could be used to deliver assessments was considered to be important.

Snape (2017, p. 53) contended that to move from "knowing stuff to doing stuff" necessitated the development of various dispositions, skills and capabilities. Such that, technology can be utilised to assist students with enhanced learning opportunities as part of authentic curricula.

Researcher reflection. The time has come to own our knowledge and be proud of it.

The culture within nursing, it would seem, supports a newly graduated workforce that is cultivated at higher education institutions but works as though they were hospital trained. It just appears that, as a profession, we can lament existing conditions and endlessly discourse about the need for change, but we stall our own development if we continue to champion 'skills', and the speed in which they can be done, over the development of academic rigor.

That is, graduates are still expected to have the skills of someone who has worked in an acute hospital setting for three years as opposed to only eight hundred hours (approximately 100 days). I feel for the contemporary nursing student who is, in a sense, sent to the wolves every time they are on placement. As an academic, I know I am not alone when I admit to having given many 'survival tips' to students to help get them through their placement. These are not tips about how to read a roster or cope with night shift; they are tips to help them cope with the negative reactions and criticisms they may face.

When I was a student nurse, I found myself adopting different personas in order to survive. I tended to downplay my proficiency to fit in with the others when I was on-campus but then distanced myself from my peers (and the negative attitudes towards them) during clinical placements. I was already an EN when I began my BN. This meant that while my peers were struggling with the idea of touching naked bodies or hearing the 'thud thud' of a blood pressure, I could devote more attention to other things such as academic writing or sociological concepts.

I learnt very early on that if the academics knew that someone was already an EN, there would be an expectation that you had mastered everything. So, I didn't let on. Not only was I spared the presumptions about my skill level, but I was free to dazzle on the odd occasion and also, to ask questions or plead ignorance in matters that I feared an EN should already know.

It was quite the opposite during clinical placement. Again, an early lesson dished out by an angry RN, furious that she had once again been saddled with BN students, taught me to let it be known very early on that I, at least, had some nursing knowledge. So utterly relieved were the RNs to have such a proficient student that they almost fought over me! They all wanted to work with me because I could get my 'work' done: and fast. Listening to them bemoan the inadequacies was painful and filled me with shame but I couldn't afford to blow my cover. It is sad that what they saw in me is still what the RNs want from students today—for them to be a pair of hands to help get everything 'done'—quickly.

As the academics in this research so clearly articulated, however, it is the knowledge around the skills that students need support with—support that I never received. I was far too busy doing the showers and taking obs.

6.2 Does Online Learning have a Place in Contemporary Nursing Education?

When speaking with practicing nurses, academics and undergraduate nursing students, it became apparent that for each participant group, there was a particular area of insufficiency or tension. They agreed that is this was rectified, it would enable greater participation within, or enhanced delivery of nurse education.

The voices of the practicing nurses dominated discourse in this category with two themes 'A short-staffed day keeps the nice nurse away' and 'Changing curriculum'. The academic theme 'Who's got the money' and the student theme 'I want more real practice' complete this category.

Students ultimately wanted to learn how to be an RN and readily sought opportunities that they perceived would enhance this objective. Several students questioned the use of SL in the nursing program; such that they felt increased levels of technology usage were incongruent with the learning requirements of a 'high touch' profession. "We need to be in hospital in real time in real hospitals dealing with real patients to learn real things" (Student H).

Information technology is embedded in society, certainly, and all manner of innovation and automation are being incorporated into healthcare—therefore for these students, radically transforming the role of the nurse in the future. Despite this, comments relayed from the peer group such as "we should be learning how to be nurses" (Student A) suggested that some students did not appreciate the need for them to embrace technology in order to be relevant in their future careers.

Whilst not representative of other students' views in general, the following comment demonstrated the disconnect of a particular individual with using SL. "It shows no body language, no expression, no anything. No other part of communication except for what you

say" (Student H). Context: 'It' refers to SL. This student was learning patient assessment and communication skills.

Rather than feelings of discontent, a practicing nurse was utterly bewildered with the notion that undergraduate students would learn nursing via a technological platform such as SL. "When you first started talking to me about Second Life or the use of virtual worlds for undergraduate education I thought, holy cow! What are they doing to our future nurses?" (Nurse D).

Of those students who did wholeheartedly embrace SL, many expressed a lack of confidence in real-life, which drove them to seek the additional virtual rehearsal. These students agreed that SL's capacity to remove the stresses and expectations of the real-world nursing environment, offered an approach to learning that met their needs.

The fast-paced and unpredictable nature of experiential learning could essentially be tamed in the virtual world where events could be paused, reflected upon and repeated. The following comment captures this notion of 'pause and play' virtual learning in SL. "I don't think I could remember everything at this point in my learning. I think it gives people a chance to look over it and think about what they have missed then they can go back and fix it" (Student G). Context: 'it' refers to SL.

Both practicing RNs and academics openly acknowledged the difficulties of translating theory into practice. The ramifications of this perceived deficit, where a nursing program that is seemingly depleted of practical hours, and is graduating students for a hands on profession, has become a source of frustration for the previously hospital-trained nurses. To clarify this, a particular comment from one of the practicing nurses suggested that this argument from the clinical sector was so ingrained in students it had become iterative.

> It also then generates a culture that 'why do you need to go to university to do this job? This isn't a job that you need university training for'—which then perpetuates that to students—and then keeps self-perpetuating that idea within the clinical sector (Nurse C). Context: 'It' refers to the negative attitude from hospital trained nurses afforded to undergraduate students.

Overwhelmingly nurses acknowledged that clinical placement is a central component of the education of nursing students. Experiential learning was seen as core to the achievement of learning outcomes and they equated any reduction in practical experience time with a decline in student capability.

> My real concern is that we're not getting that hands on. A recent graduate was so poor, the standard of care was so poor. You couldn't say go in and do that set of obs in that room, take out those catheters and be assured that it was done. Because it wasn't. And I think what in the hell are we doing with nursing. What in the hell! (Nurse C).

Despite the consensus about the value of clinical experience, the nurses openly admitted witnessing their colleagues treat undergraduate nurses in a negative manner during their clinical experience. It was suggested that many nurses "don't see the value…or maybe have a fear…of the university sector" (Nurse C). Budden, Birks, Cant, Bagley, and Park (2017) described a recent Australian study that would concur with this finding where over fifty percent of nursing students felt bullied or harassed with an RN mentor being the likely perpetrator.

The potential benefits of virtual experiential learning moved the universities into a positive realm with the nurses. The higher education sector was no longer thought of as the cause of the problem but offering a solution. All nurses thought the use of SL would improve the learning outcomes for students and could fill the perceived capability void caused through decreased clinical placements. Rehearsal in the SL environment such as the setting shown in

Figure 6 was viewed as a worthwhile learning platform prior to clinical placement and was appreciated by the nurses. An example:

> I think it's something everyone should have, because I think students that are very theory based and good at school, well how do you know that they are good at practice, under pressure. So this is that next step which will put them under a little bit of pressure because they are one on one, so no, I think everybody needs it (Nurse A). Context: 'this' refers to using SL as an educational tool.

Nurses shared the idea that whilst the physicality of nursing could not be taught in SL, clinical reasoning could be rehearsed in simulations and at a pace that was suited to each learner. This would not necessarily reflect the complete realities of an acute ward, however, the learning outcomes related to clinical decision making would be transferable. A particular nurse offered that SL could even be an effective learning tool for the continuing education of other practicing nurses. The experiential modality would offer those who are abstract learners an alternative to concrete learning strategies.

> I'm actually thinking that even using it in hospitals as an e-learning tool -perfect. You know, because it's a different, their getting the full gamut. If they're readers they can learn by the written word that's perfect. If they're visual that will be covered in Second Life, it covers everyone (Nurse A).

Despite the fact that at the time of this research, all of the RNs were active practitioners, their interest in nurse education, curriculum development and its associated outcomes was high. They were cognisant that curriculum development is driven by altered healthcare needs and changes in clinical best practice (among other imperatives). They understood that the increased scope of contemporary nursing practice has led to additional content being added to the educational load of undergraduate nurses. There was discussion about the dilution of quality that these additions to curriculum had caused: "it [the overloading of the curriculum] really effects the quality of the student that comes out" (Nurse D). The same nurse elaborated:

> All of the learning I had focused on acute care. I had lots of opportunities to focus on acute care. I have seen a number of students go through various curriculums with varied focus and I think what that does is water down the students' learning opportunities—more so than provide them with a robust learning opportunity (Nurse D).

Figure 6. Acute ward area for virtual simulation rehearsal in SL

Academics did not refer to the curriculum as diluted though it was a topic of conversation from the perspective of the cyclical manner of their work; delivery and development. It became clear when speaking with academics that they felt pressured and lacked time to adequately research, write and resource the nursing program. It was suggested that SL did not initially experience a wider uptake amongst other staff given the contextual realities of their high workloads.

> I think there is a small percentage that have any interest in introducing it—using it. Because they haven't engaged with it. Struggling with the complexities of the new curriculum. ….there's already too much stuff to try and fit into some of the units (Academic B). Context: 'it' refers to SL.

At the time of this research, a new curriculum had been introduced and this had increased workload pressures. Many of the academics spoke about being time poor to the extent that "in the end we all worked outside of our workloads" (Academic A) to ensure the SL program was delivered to the students. Gregory and Lodge (2015) contended that additional academic workload is required, though not always supported when developing and delivering educational technology and this certainly seemed to be the case for these academics. Appendix O demonstrates that during the time of this research, academics were able to negotiate 25 hours of workload for a teaching innovation. It is understood, however, that this would not be extended to the largely, casual workforce that assisted in the delivery of the courses associated with this research.

There has been conjecture in the literature that the dominance of a research culture in universities translates to the undervaluing of teaching and learning initiatives (Tynan, Ryan, Hinton, & Lamont Mills, 2012). SL is an example of teaching via technology where actual and associated costs are not always factored. Gregory and Lodge (2015) suggested that these costs can include, though are not limited to, redevelopment of content, information communication technology infrastructure and the supporting of students.

When SL was first introduced in the BN program, all of the academics were sympathetic to the imposed increased workload of the students. Not only did the students have to learn how to use SL, but to also contend with a bulging course because of the additional content from the new curriculum.

Appendix R is the associated course guide and, as can be noted, students had to complete four assessment items, which did not include the formative assessment using SL. The weekly timetable demanded continued engagement across the semester. "Part of the problem with the chronic illness course was the enormous amount of workload that they had. I mean to add SL on top of this massive amount of learning they had to do" (Academic C).

The shared interest in the wellbeing of students was affirming, however, only to a point where student hardship was acknowledged, though the systems maintaining these challenges were not addressed. Students perceived sub-optimal experiences, learning in an overburdened curriculum invoked sympathy from the academics and similarly, nurses were understanding towards them as they attempted to learn a practical course in a theory-laden program. Nurses and academics shared a goal; that students would become graduates who would thrive and not just survive. One nurse's view of the inevitability of these circumstances paints a bleak picture of what awaited the newly graduated, novice nurses. "Look… overall I think that most of them survive" (Nurse E). Context: 'them' refers to newly graduated nurses on the wards.

6.3 Experiential Learning Can be Virtual

Given the strong association with practical learning and the nursing profession, it is not surprising that all the voices of the participant groups are equally represented in this category. Their voices are captured in the corresponding themes 'More experiential learning' (practicing nurses), 'It's virtually all about the outcomes' (academics) and 'The potentials of learning in SL' (students).

All the practicing nurses referred to the widely-held belief that undergraduate nursing were given limited practical experience to prepare for the role of an RN. Nurses actually expressed a sense of frustration, which was twofold. This was on behalf of the students who they perceived as incompetent and therefore unable to complete allocated workloads and on behalf of the ward nurses who are often left to struggle with additional clinical loads.

The expressed concerns of the RNs provided insight about how their own personal experiences altered the way they approached the mentoring of nursing students. As articulated by one of the RN participants, the inadequacies of the higher education system were implicated.

> They don't get enough clinical practice, so they come out theory based only, which is a problem because then they don't cope. They're on to a ward, and they're not super-nummary; they're actually part of that ward environment, and they find that they can't cope (Nurse A).

Challenging the existing practical component of BN programs, Patterson et al. (2017) stated that the "theory practice gap is common" (p. 101). The prospect that SL could actually provide additional practical learning opportunities was considered to be very positive by practicing nurses who saw it as a way of improving the outcomes for graduates. The accreditation body, ANMAC require the minimum of an 800 hour clinical component as part

of the BN (ANMAC, 2019b). Meeting these requirements, seems almost moot and perhaps in a sense of desperation, a nurse offers the following:

> The truth of the matter is that there are no clinical placements or limited clinical placements and if this is a way around that -this is a way, that in any way helps our students become more prepared in the current educational system then I'm all for it (Nurse D). Context: 'this' refers to using SL as an educational tool.

In fact, every one of the practicing nurses agreed that SL is a format, a learning resource, where students could rehearse clinical scenarios to enhance particularly their clinical reasoning skills. Consistently they referred to the lack of ability of nursing students to think critically and manage time. They presented the reasoned argument that SL could offer the experiential practice that was required.

While all of the nurses supported the notion that SL could provide the opportunity for the rehearsal of clinical skills, it was agreed that some capabilities will pragmatically require real-life practice in the clinical setting. The following comments from Nurse A capture the general consensus:

"Purely because they will have the time to see scenarios, yes it won't be as quick as it is in acute care, but they'll see scenarios they'll be able to think it through" (referring to virtual learning)

"…well maybe not—you know the skills the lifting and everything like that" (referring to real-life),

"but learning when to do them, and why, which I think is the most important thing about nursing" (referring to virtual learning and real-life).

Context: Nurse A is suggesting the use of virtual simulations in SL would enhance critical thinking skills.

Whilst most students did not identify a perceived need for more practical experience, they did speak about how SL might assist them to improve their nursing skills. Indeed, previous research substantiates claims where the decision making of nursing students (McCallum et al., 2011; Rogers, 2011) and patient interviewing techniques (Sweigart et al., 2014) were shown to improve after rehearsal in SL, and that these skills were transferable to clinical practice.

All academics and most students contributing to this research supported the use of SL for the rehearsal of specific communication techniques and offered discussion that also aligned with the RNs. Such that, they stated that certain practical skills like, for example communication, attained previously in SL, could be further developed during clinical experience. For example, a student provided the following perspective:

> It's so easy to practice skills once you get the hang of it but it's communication that is probably the hardest skill of all, I think. And I think lots of people need to practice their communication skills. It's not like 'oh it's just communication skills'—it is such a big part of nursing. Like I had to go into four random people's houses today on prac—you need to have good communication skills and that's not easy. It can be awkward (Student G). Context: referring to skills that are transferable. Student plays down practical skills as they can be practiced—communication is difficult though.

This comment acknowledged the notion that SL enables a scaffolded approach to experiential learning.

Chen and Law (2016) discussed the use of scaffolding in virtual learning (game-based play). They concluded that through collaboration which is a soft-scaffolding approach, students have the opportunity to practice, and this can result in enhanced motivation and increased construction of domain-specific knowledge.

Student responses to the scaffolding were complex. Some students did not see it as a necessity at all, whilst others referred to the need for a scaffolded approach, not for

themselves but on behalf of their peers. Whereby several students surmised, the virtual scaffolded approach could translate to increased confidence when learning during clinical experiences. They acknowledged that SL "removes some of that extra exposure" *(Student D)* to the clinical environment and that, this layered approach to learning to communicate with patients was positive.

A student shared this perspective about their peers: "I have seen some that are just not confident—more so on prac actually. You know they'll stand back and not quite be ready to interact with people. Whereas I am just sort of straight up" (Student D). Context: discussion about peers; fellow undergraduate students and their lack of confidence whilst on practical experience.

Academics reflecting on their observations of students during the learning experiences, stated that positivity post virtual simulation, was actually immediate and clearly maintained over an extended period. An observation from a particular academic confirms this, along with the notion that students are learning from the actual experience inworld and also afterwards. Student reflections about the simulated virtual experience demonstrated educational practice that was applicable to both real and virtual worlds. "They would come to labs a week or 2 weeks after and they would come in and they would say, 'Oh my gosh that was so much fun. I can't believe it -I know I missed this and that you know'" (Academic G).

It has been demonstrated that students often achieve enhanced confidence associated with increased clinical experience or traditional simulation (Gore & Thomson, 2016). Recent research revealed that the self-efficacy of nursing students improved equally where simulations were timed either before or after clinical experience (Kimhi et al., 2016). Authors of these studies concluded that the authentic and repeatable learning opportunities enabled through simulation provided these positive results. The participants in this current research have described similar patterns of learning. These are both demonstrated through experiences and learning outcomes via the use of virtual rehearsal in SL.

> You know that in that area you have got those people there to support you and know no one is going to get hurt. You can only learn from that. It doesn't matter how many mistakes you make you can only learn from those mistakes (Student I).

The academics concur with the notion that repetition of virtual experience generates learning, indeed, the students learnt from making 'consequence free' mistakes "or alternately that they did a really good job" *(*Academic F). The already established understanding of the learning outcomes acquired from traditional simulation (real-life), was an important foundation when developing the SL simulated learning experiences. A particular academic "thought it would be valuable" (Academic A) and admitted that whilst some learning outcomes in SL were explicit, others were not as clearly defined. Another explained:

> The way we have set up the marking rubric, it is about marks and skills. But it's also about those professional attributes we are developing such as confidence, professional communication, the content of your communication. You know the empathy and compassion that goes along with that and so it's those elements that students may not be aware that this is developing as well (Academic F).

To review the assessment rubric mentioned in the previous quote refer to Appendix K. From this, it is clear that the ability of the students to use the nominated acronym when conducting a pain assessment is being measured. As Academic F acknowledged, the participation of students in this virtual assessment can also encourage the development of enhanced qualities of empathy and compassion. These desirable yet incidental 'elements' are not measured or acknowledged in the rubric.

Young, Godbold, and Wood (2018) suggested that the ability to develop professional attributes such as those mentioned above, has been altogether missing within theoretical learning and, to an extent, also in undergraduate clinical practice. It is well established in the literature that caring and compassion are considered to be innate characteristics, however, best practice to learn these is not clear (Young et al.). Perhaps this is why when discussing what

the students learned, the academics "don't know exactly what they may say they learned but I often find if they reflect on what they learned, they often learn more than they think"*(Academic B)*.

6.4 Learning Virtually is Connected Learning

Despite having very different experiences of interacting with SL, participants from the three groups contributed thoughts and perceptions about connected learning. The themes 'Community of practice' (clinically practicing RNs), 'Learning together is better', (higher education academics) and 'Let's pitch in and learn' (undergraduate nursing students) combine to enable a rich understanding of the experience of interacting in the online world. These interactions further serve to strengthen connections between individual systems and resources such as is represented by the ecology of learning framework.

Students offered that learning in SL actually provided an opportunity to share their learning experiences with friends and family, and in fact transcended any geographical separation and abated the inference of technology use and isolation. The shared virtual learning was spoken about with positive emotion and remembered with joy. Banfield and Wilkerson (2014) demonstrated that the pleasure derived from using technology such as SL enhanced intrinsic motivation.

Supporting the concept of enthusiasm for shared learning, one student spoke about learning with her daughter for shared role-play activities in SL in the following comment: "I actually used my daughter in my lounge room at home—she is a film student and thought this was fantastic. It was great that we could do this together*"* (Student D). Further to this, other students spoke about the social aspect of SL where "all you really did was walk into a room and just talk with your friend. It was so great" (Student G). Socialising was further extended to shared learning opportunities where students spoke of working on assessments together inworld.

With a focus on shared learning, a number of the students who were interviewed clearly valued SL over other forms of social media because of the sense of connectedness they felt.

Telecommunications and Facebook were deemed less superior because SL offered groups a live discussion and presence when in the form of their avatars.

> I think it was to keep us in contact because we were all from different places. It was during the assessment. I kept in contact with XX and YY from [another campus] because we've got Facebook but you can only write whereas in SL we can meet as a group and talk (Student F). Context: 'It' refers to the experience of using SL.

Higher education academics voiced different experiences. Before reaching the point where they were able, or even wanting to use SL, they received 'classroom' training where they were guided to download the program, create their own avatar and learn basic inworld actions such as walking and talking. Aligned with Experiential Learning Theory (ELT) (Kolb & Kolb, 2009), all of the academics who participated in this training agreed that "having the support to learn how to use it was really important" (Academic C).

Another academic suggested this training increased self-assuredness inworld. "That's how the confidence was built really it was being guided" (Academic A). It was also clear that the use of SL engendered a sense of comradery amongst these academics that not only proved a foundational motivating factor to using the platform, but also a welcomed source of support when learning how to operate their avatars.

Given their own personal success in using SL, it was not surprising that the academics offered a guided approach to learning in SL with their students. What was surprising was their commitment and willingness to interact with students socially inworld to achieve this. The example below demonstrates that this initiative was motivating for students. Field notes also reflected this enjoyment where a particular academic was observed to be recalling an experience of working using SL, stating to a group of other academics who had not used the platform: "Oh my God. It was so funny! You should see me in there now, I have been rehearsing all these moves" (Researcher field notes). Also:

> I think prior to that we actually did this task—you know some of the groups from my labs we would meet after dinner. I'd say at 8 o'clock tonight who is on. Let's meet in SL and go through it. So, it was basically like that. Something that I was so fearful about you know extra time, extra commitment was actually a really good motivational tool for students. It made it so much easier knowing what they were talking about …. To actually get on and go through it together. That really made a big difference (Academic G).

This academic's discussion is an example of computer self-efficacy. This phenomenon is an extension of Bandura's work where self-efficacy is considered instrumental in influencing motivation and behaviour (Bandura, 1989). Further, Compeau and Higgins (1995) found that heightened computer self-efficacy resulted in lowered computer anxiety levels that can influence learner expectations.

Banfield and Wilkerson (2014) supported the idea that increased intrinsic motivation enhanced computer self-efficacy. Intrinsic motivation is about enjoyment and self-regulation. The following comment represents the essence of the students enhanced computer efficacy, where positive virtual learning outcomes evolved during the social interactions inworld prior to the formal learning assessments.

> I think knowing SL—and being able to explain it to them, they felt more comfortable I think when we got in there together, they were so much more relaxed. They could concentrate on the pain assessment rather than concentrating on how to sit there moving your arm. It was a really positive experience (Academic G).

The viewpoint of some academics also supported the use of SL as a means to enhance connectedness between students with peers and educators with students. This could be interpreted as a recognition that the traditional bonding in classrooms or in nurses' quarters could also be entirely possible in the virtual world. Such that academics voiced that SL could

be a platform in which to learn, given that, it also has the capability to facilitate the social needs of the learner.

> I can see that it has huge value and the more we're trying to relate to the students of today with multiple commitments. The technology, we need to be using it and using it wisely. I think it's something we just can't avoid (Academic C).

Academics were acutely aware of the multiple life commitments of students, expressing their view that this explained their poor attendance at lectures on-campus. Appendix Q is an excerpt from minutes taken at a discipline meeting and it demonstrates that academics were aware of a decreasing student presence on-campus. This was cause for embarrassment as expert external educators had recently presented to meagre student audiences. Minutes reflected the ensuing conversation that considered the possibility of moving the lectures to an online format to enable greater student engagement.

Conversely, below is an image that captured an informal gathering of students in the virtual courtyard of Interaction Island (see Figure 7). This suggested students were able to successfully manage learning and social aspects of student life aided by SL.

Figure 7. Students meeting informally at the courtyard on Interaction Island.

Having a robust connection with the previous methods of training (a lived experience for some), practicing nurses were quick to compare traditional hospital training with contemporary higher education approaches. There was a strong emphasis on their perceptions of contemporary approaches with particular focus on the use of technology, which enabled students to learn in their own time and without having to be physically present.

Nurses further reported that their peers did not always see education via technology as a positive development. As an example, one particular nurse was passionate when saying that due to the increased offerings of online education, students would not be exposed to the support of colleagues and the formation of friendship in the way that hospital trained nurses had been. Whilst drawing comparisons on previous training, this point was accentuated disapprovingly:

> We learnt things together as a group you know. Like there were 50 of us that went through, we learned together, we grieved together. You know we commiserated with each other when we had to work in different circumstances and when we found it difficult you knew we could get through (Nurse B).

It is extremely thought-provoking that while the practicing nurses asserted the detrimental effects of online education to students' friendships and ultimately their experience of learning, they at the same time, acknowledged the virtual environment of SL as an arena with the potential for both minimising isolation and forging connections.

> These kids don't have that and I just think it's such a pity, and I hope that the world of simulation…does it remove us further away from that personal interaction? We need to be able to share experiences, and I wonder whether the virtual world you're using, are you able to be bring people together that are isolated and into a virtual world? (Nurse B).

6.5 What Influences Adoption of Technology for Learning

Most of the participants had previously been exposed to some kind of virtual learning platform, however, prior to this research, none had engaged with SL. This category represents the voices of all of the participants; however, the voices of the students are dominant as represented by the two themes, 'Learning is *nioce*: it's different' and 'Learning requires preparation'. Completing this category, the themes of 'Virtual learning' and 'Learning in SL' encompass the thoughts and perceptions of the practicing nurses and academics respectively.

Building on prior experience is a recognised approach to learning (Kolb, 1984) and students particularly, linked their previous experiences of gaming or computer use to the skills of using SL. This facilitated a readiness to launch into SL, or for some, a nonchalant attitude towards learning how to negotiate this platform. However, one RN, promptly offered a distinction between the two activities*:* "[gaming] is a waste of time where this is a learning tool" (Nurse A). This was effectively an unintended negation of any prior experience that a student would bring to the activity.

Nevertheless, some students expressed their familiarity with technology definitely conveying a sense of comfort when approaching the use of SL. For example, Student A verbalised that*,* "I am not frightened at all. I have always had a computer. I do all my own bookkeeping with my own businesses." What is relevant, is the broader discourse relating to the digital divide where computer use is considered in terms of consumption versus production of information (Selwyn, 2010).

What became clear when speaking with the participants was how previous engagement with technology, even ostensibly frivolous technology, boosted their readiness to use SL. One particular student, for example, imagined there to be an enormous distance between their mastery of SL and their penchant for 'gaming'. Student I, felt very unprepared for virtual learning having only played games "where I have to collect jelly beans and stuff."

Once exposed to learning in SL, the same student conveyed what Yau and Leung (2018) would refer to as self-efficacy. The student went on to express enthusiasm, wonderment and almost a sense of pride in personal achievement with the successful use of SL:

"SL is something really different to anything I have ever encountered; it's something I have never done before" *(*Student I).

To further explain the apprehension about interaction in SL, one student offers the following:

> Oh because it is something new. You know how everyone has that perception—I don't know how to do that. I don't know how to learn that. It's too hard bla bla…..you know they think like 'It is beyond my capability'—you know because it is something 'computery' or something (Student C). Context: 'it' refers to SL.

Regardless of prior experience, this suggests that there is the potential for students to have different reactions to the use of technology.

A number of students offered explanations as to why they thought particular age groups liked or disliked using SL as a learning platform. A younger student compared SL with gaming platforms and decided that SL was inferior "because the graphics were quite poor, and there was a lot of… I guess… lag" (Student J).

Whilst another student explained that older peers preferred SL because the younger students were more comfortable with real-life role-play as seen in the nursing simulation laboratories on-campus. However, older students expressed a preference to learn via the 'cover' of a virtual world. Essentially, role-playing as an avatar enhanced confidence for these older students that was not apparent when role-playing in reality as stated by Student D.

"You know a lot of the younger ones are just more confident—you know being out there and loud; being out in front of everyone—they are OK to do role-play" (Student D).

Some students cautioned that one could not generalise about technology use and age. There was a perception amongst particular students that only the younger of the cohort would favour SL as a learning platform. Highlighting this, a student shares being pleasantly baffled that an older member of the group enjoyed using SL for study purposes and for leisure.

> A few of us met on there. The person who used it the most is X and I would have thought that if anyone would struggle it would be her—how funny is that? She still uses it—I don't know what she does on there. She loves it (Student F). Context: 'on there' refers to being in SL. Student X, at age 52 was at least 20 years older than other peer group members.

A decision to increase SL learning was enacted largely due to the wider uptake by staff who were now wanting to use SL and the presence of the previous student cohort on-campus who could share positive experiences about learning in this platform. This decision was also aligned with a learner-centred philosophy (Department of Education, Office of Educational Technology, 2017) such that students were able to decide how they would meet the learning outcomes. Therefore, during the second academic year that SL was utilised for the delivery of the compulsory pain assessment item, and prior to the corresponding semester, a different (additional) course offered students the option to complete an assessment item using either SL or real-life. Students were required to create varied health environments and record their interactions with simulated patients in real-life or use the ready-made virtual environments in SL.

The following focusses on the varied reasons as to why students chose one option over the other. Some students made their decision based on the presumption of ease. The option to use SL, where the environments were already represented was viewed as the least worrying or as an uncomplicated option. Other students however, predicted that SL would be difficult to master and thus opted for the real-life assessment. An example from one of these students:

> I think it would be so stressful to set up your house that is like a clinical setting and then having to get your friend to act as the patient. Then to come over and then have to improvise or read off a script that you write for them. Then you have to have a third person to come over and video. So, I just think it is so much easier to use SL—far less time consuming (Student G).

So as to prepare for when the SL assessment was compulsory later in the program, some students chose SL. This enabled the student to combat the stress of their self-predicted difficulties about SL, whilst also decreasing the pressure of an anticipated high workload.

Practicing nurses offered that the additional exposure in SL could reduce the stress of clinical placement and ultimately provide a learning space to develop professionally from observing more learned others. The following quote captures this perspective:

> I just think that they will learn more critical thinking doing Second Life because it is that one on one environment, and they can watch other people go through that environment as well and think of how they would do it. In a classroom its very…it's a classroom. It's a school-based thing (Nurse A).

Some students were just not open to the idea of learning in SL. Reflecting on peers who were averse to using the virtual world, a student shared this experience: "They were my age and they just said no" (Student A). This is a typical response and considered as being based on a perception that could have been overcome. Problem perceptions were often small hurdles as expressed by Student B: "You know how sometimes you see programs just crash and don't work I thought SL was going to be like that—but it wasn't."

Presumptions with age were characteristic of learner motivation and capability of technology use with older peers suggesting that young students were unmotivated and tech savvy. Most of the students connected age with its relativity to the acceptance or readiness to use SL. A student provides an example.

> Surprisingly it was some of the young students. I think it was because they thought they had to learn something really new to do this assessment. You know so they thought it was easier to make a video—they already know how to do that. I think that they just thought it was extra work (Student D). Context: referring to some student peer responses as to why SL was not chosen.

An alternative and opposing discourse revealed an assumption that younger students would adopt SL because of a presumed high use of social media, thus making the transition to this learning platform an easy one. The following student, aged 40 was adamant that generalisations of age and technology use were actually well founded. This student did not associate quality learning with the use of SL.

> I mean I am 40—so I don't know if you get to interview people who are 20 who are into social media and this type of stuff so I have probably got a bit of a swayed view of how being taught by a virtual world than someone who is 20 (Student H).

Researcher reflection. Walking a mile as my avatar.

It seems staggering now that I persisted past those feelings of embarrassment and clumsiness to a level of some competence because the use of this technology certainly did not feel intuitive for me. But of course, it is not intuitive for many—perhaps unless you're a digital native that is.

I knew that if SL was ever to be embraced as an educational platform, I couldn't expect everyone to go through the hours of self-directed learning that I had done or be schooled by their 13year old! Obviously, some wouldn't need much hand-holding, but others, I suspected, would depend on it. As I began to conduct workshops for academic staff on negotiating SL, with great patience borne of my own struggles, I noticed a huge variability in their levels of interest and aptitude but all needed guidance.

6.6 Technology Enhanced Learning: SL in Practice

Prior to the introduction of SL, simulated learning activities were traditionally conducted using mannequins in on-campus simulated learning environments (SLEs). This shared historical knowledge prompted conversations amongst academic and student participants. These were focused on comparisons of learning in a technological platform with traditional simulated education methods. The student theme 'Comparing SL to traditional learning' and the academic theme 'Working in SL' are a representation of these deliberations. The contributions of practicing nurses to this dialogue are captured in the theme 'Is the technology good and are the people good enough?'

Academics stated that using SL required less resourcing of staff, space and training requirements and, ultimately, as expressed by Academic D, they decided that delivery by simulation "is more efficient in a virtual world." Indeed, all academics spoke about the appeal of working in SL due to its ease of use, flexibility and overall reduced workload. The following statement represents an expression of this.

> As long as we had our login sorted and headphones that worked and a place to sit then there was very little else to do. You know we knew our role and what was expected of us. We logged on and just started straight away. You know there was no set-up required and no clean-up required (Academic E).

Offering conditioned support, a particular practicing nurse agreed with the perceived efficacy of using the virtual platform and added that "SL should be used to enhance a program not replace it" (Nurse B).

Students extended this comparative dialogue and particularly for simulation assessments, some resolved that a consistency of learning outcomes could be maintained whether using SL or the mannequins on-campus. Several students added that at times SL forced them to extend their thinking and to "dig a little deeper" (Student C). Due to the

avatar's lack of facial expression, for example, students spoke of their reliance on verbal communication skills rather than visual cues to discern certain patient information. Student D explained this further when speaking about conducting a patient avatar consultation inworld:

> Because you couldn't see—you had to work through the process of what could have happened. My scenario was that she had the knees—you couldn't see, you still had to think about all of things you had to do. Visually this didn't matter—there was still all the normal nursing stuff you would have to do (Student D).

Academics offered additional motivators for working in SL; such as professional development opportunities and also the outcomes of improving the learner experience. For example, one academic associated the use of technology with being a "better teacher" (Academic C). Some academics actually expressed intrigue about SL as a simulation platform and were curious to witness its value to student learning first hand. All of the academics expressed an overwhelming desire for the use of SL to be a positive and valuable experience for the students. A particular nurse, however, who supported SL as a viable teaching option, predicted a push back from clinical staff given this method of learning is in its infancy and lacks wide approval.

Perhaps evidence of social influence, as suggested by Venkatesh et al. (2003), the notion of comradery or a sense of team effort was strong when discussing how academics learned to work in SL. They were not unlike the students in that they were time poor, given the demands of academic life. Many academics in this research were given no choice but to upskill outside of work hours when it came to learning how to use SL. This aligns with comparable experiences of academics from other universities (Gregory & Lodge, 2015),

Academics demonstrated a supportive and collective commitment to deliver the content using SL. The additional workload was expressed in a matter-of-fact manner where it was seemingly an understandable requirement or an expected commitment to work increased hours. They encouraged each other to get on with it, no matter what it took.

Both academics and students expressed varied preferred learning styles when training to use this technology. Some academics preferred to learn via instructional video, whilst others favoured written instructions. Kolb and Kolb (2005a) would describe these preferences as assimilator learning tendencies.

Opinions about SL changed as academics and students became more familiar with the technology, with many being surprised at "how effective it worked" (Academic B). Expressing a similar sentiment, Student C stated, "you know everything seemed like it was going to be hard, but…it was actually quite easy." Supporting the notion of effort expectancy (Venkatesh et al., 2003), academics acknowledged that virtual assessments were conducted with increased ease and to a point where one particular academic no longer "worried about sitting and you know falling down the hole between 2 chairs (laughs) or sitting on a pot plant or whatever. I had that sorted—so it was all about them doing the pain assessment" (Academic G). This could be interpreted that technology had moved from being an unknown and unexplored platform to one that could enhance a work environment.

Interestingly, the students' experience of SL was equally ameliorating, though from an altered perspective. Overall, they perceived that completing an assessment in SL was actually more attainable and less daunting. Such that, some students spoke of decreased anxiety about learning when being an avatar. It could be said that this type of virtual learning had provided the students with an escape from the pressures of learning in previously experienced ways. For example, Student A described a preference for being an avatar for an assessment rather than being filmed in real-life. This implied that being a student avatar nurse was easier than being themselves in a real-life simulation.

> Yes, I think what's interesting too is thinking what to say as an avatar rather than…you know not being self-conscious when you are being filmed. It took that away. I mean I would be quite confident being a nurse in real-life and going to a patient but being filmed is awkward (Student A).

There was a real sense, when speaking with both academics and students, that SL was not a technological challenge and provided relief from traditional teaching and learning methods. Students particularly appreciated the opportunity that SL enabled them to learn, from and with peers, as well as experts. Student K captures this sentiment in the following: "I mean I guess I could have googled things but this way we got to talk to people".

With this appreciation and active engagement in their learning, students offered suggested improvements to future virtual sessions and assessments that ranged from developing a mobile app for SL to increasing the opportunities for inter-professional and global learning.

Researcher reflection. From virtual humble and hopeless beginnings.

I have genuine empathy for both students and academics who approach using technology that is foreign to them for the first time. My own pioneering experience of being inworld was, interacting with a group of non-nurse academics: it was very daunting. This was at a meeting of all staff interested in using SL as a teaching adjunct. In this virtual workspace, I felt the same clumsiness as I did at home when trying to keep up with the children in their video games with them telling me repeatedly with great hilarity that moving my own real-world body would have no effect on my virtual avatar. In this context, though, in my place of work where I usually feel competent; it was utterly mortifying. I struggled to operate my avatar and travel through the virtual space.

At one point, the chair of the meeting was standing next to me, addressing me, welcoming me while I frantically pushed random buttons on the keyboard utterly unable to focus and incapable of responding. He walked away. I was left feeling completely inadequate and anxious that he may have perceived my behaviour or inaction as rude. I could not even respond to him and say hello—how was this ever going to be an effective teaching tool?

6.7 Feelings are Important when Learning

All of the participant groups referred to their experiences interacting with SL using emotive language. Their collective perspectives are represented evenly in this category in the themes 'Learning in SL—emotions' (practicing nurses), 'The hormones of learning' (academics) and 'The emotional rollercoaster of learning in SL' (students).

When discussing the virtual learning environment (VLE), the academics relayed their feelings about interactions inworld. These descriptions were positive and stood in absolute contrast to their reported experiences of real-world teaching. The nurses agreed and offered sentiments suggesting, "the last thing you want to do is mentor a student sometimes" (Nurse D).

Delivering content to students, marking assessments and observing their practice are not activities that generally evoke feelings such as those that were actually described after working in SL. "absolutely elated because it's so much fun" (Academic G) and "No hesitation. I would love to do it again. Overall, I thoroughly enjoyed it. I certainly had fun doing that… huge fun!" (Academic C).

Some of the experiences of the academics mirrored that of several students where those who were not initially motivated or were tentative to work with students in SL had an alternative view after experiencing virtual teaching. An academic recounted a typical emotive evaluation of the virtual encounters: "XX convinced—well advised—me that I would be involved so (laughs) I was hesitant in the beginning but found that I absolutely loved doing it. I think I excelled in the end—you know with my actions" (Academic G). Context: 'my actions' refers to the academic's avatars capabilities inworld.

Students echoed these feelings of pleasurable learning opportunities using SL. Some students spoke about learning in other virtual formats where synchronous speech was still possible. The 'fun factor' that SL provided was viewed as being important to the learning

process and explained why the students intentionally chose the SL experience. A student clarified:

> It's fun (laughs). You know I just learnt in there but being a bit of cartoon character was a bit more fun. If you were doing skype or something like that, I know it would still be a person that you are talking to—but this was more fun (Student I).

Figure 8 is a photograph that captures the essences of this sentiment. This was an informal meeting of students and one academic where students nominated to be portrayed as a dog, a standing up wolf, vampire and human avatars.

Figure8. A depiction of a virtual meeting in SL showing students represented as avatar humans, animal forms and vampires.

Whilst academics recollected initial feelings associated with being unsure about the nature of the assessment, they recalled many students who, when face-to-face, displayed initial stress and anxiety regarding the inworld assessment. Some individuals suggested that this was due to "fear of the unknown and having to learn new skills" (Academic D).

Aligned with best practice as described by Yorke (2003), the SL-based formative pain assessment was created to foster self-regulation. Academics, however, witnessed students

being unduly worried about the assessments. They suggested this was due to students not understanding the process of learning aided by actual formative feedback processes.

> They still treated every single one of those assessments (not just SL but our other ones that were check offs in the lab with the skills even though they're formative) they all treated them as if it was a task fail, life or death kind of stress situation. They didn't fully understand the idea of the formative part versus summative (Academic C).
>
> Context: 'they' refers to the students enrolled in the course using SL.

As students progressed through the program learning in SL, it was apparent to the academics that just as their initial fears had been allayed with actual experience, the unknown was now known and students were not expressing concern about the use of SL. Academics reasoned this because they perceived students "did feel that this actual experience had meaning to their learning" (Academic F).

The importance students assigned to the experience differed amongst the cohort. The experience of using SL was an enjoyable escape for one particular student.

> If it were another assessment, I would recommend it. Going to university was a really big thing for me. It was going to be so overwhelming—it really broke it up and made my head a lot clearer. So, I thoroughly enjoyed it from that aspect (Student F).
>
> Context: 'it really broke it up' refers to the SL experiences.

Other students offered more specific examples of how SL decreased the tension associated with learning at a higher education institution. During the pain assessment, student avatars were required to interview an avatar patient being operated by an academic. Several students spoke about how this experience in SL improved their confidence when learning. These students championed the use of SL because of a desire for 'detached' learning. Such that students described their interactions in SL in an almost dissociative manner; the avatar or the interaction between student avatar and patient avatar are the focus—not the student and

the academic. "It took the pressure off. I think I would have been a lot more nervous if I had someone watching me in real-life" (Student I). Context: 'It' refers to learning in SL.

This could be interpreted that the virtual world enhanced learning due to the distance it created between students and academics. SL allowed the student to behave in a manner that was not impinged upon by performance anxiety.

The reduced pressure of virtual experiential learning resonated with the nurses who believed there was some pressure "but it's more relaxed before going into the workplace" (Nurse A). Students concurred with this notion and described being more comfortable in a virtual episode of care because the patient was the centre of care—rather than themselves. Here again, the virtual space between the student and academic provided a screen that afforded the student confidence. "…you know so no one is looking at me—they are just looking at what I can do" (Student D).

Academics witnessed other patterns of virtual student learning that emulated on-campus behaviours where differences in student engagement and sureness were apparent. It would seem their observations would support the influence of self-regulation and confidence enduring in SL. Similarly, Bradley, Browne, and Kelley (2017) found that positive self-regulatory behaviours combined with high self-efficacy were predictors of academic success. The technology in some instances remained a consideration that one academic used to explain students whose behaviours inworld did not exude confidence.

> Some students were engaged right from the beginning. They hit the ground running; from the start of the conversation they were in the role. And then there were some kids who were unsure of themselves. Bit hard to tell. You know, whether it was the assessment or the technology (Academic E).

Most of the academics spoke about how the use of technology ceased being a potential imposition to perceived learning. It was clear to them that student behaviours changed during the activity to a point that behaviours were described as nonplussed about technology. The

academics openly discussed that as students' demonstrated competence inworld (computer self-efficacy), their self-confidence was enhanced, and this would be an affirmation that their efforts in learning were worthwhile. Academics shared that ultimately the objective was to transfer the confidence that students demonstrated inworld to real-life practice.

> Also then bring all of that confidence to be able to converse with a patient and get the task done. And once they manage that I think that gives them confidence. It's almost like…well they call it virtual worlds of course. It's about for me, what this is about is building confidence to then get to the wards and do it with a real person (Academic G).

Researcher reflection. My avatar is better at public speaking than I am.

When I am in front of a classroom, I really own that space. I move about the classroom with confidence and can take a non-participatory group of students and by the end of the session have them all fully engaged, interacting and wanting more. Yet, I am not a gifted public speaker -despite years of forced participation in school based speaking competitions.

I am after all really passionate about my work with technology, simulation and students though I shy away from these 'opportunities' to present work in front of peers. To avoid this public appearance however, I have used SL as a shield on a few occasions. I recall when I was asked to visit an interstate university to share my experiences of working with SL to a multi-disciplinary health faculty. So as to avoid a 'real' presence, I presented to the group as an avatar.

Now, they all thought that I was really innovative given that I had opted for this unique way to demonstrate the platform. Little did they know, I did it because it was far less daunting speaking to them as an avatar, in the safety of my office, than to be in front of them in real-life.

6.8 Looking Good Sister!

The information presented in Looking good Sister! is presented as an excerpt of a manuscript published in 2019. The co-authors of the manuscript, Associate Professor Rosanne Coutts and Professor Iain Graham contributed by reviewing phases of the research analysis process.

Irwin, P., Coutts, R., & Graham, I. (2019). Looking good Sister! The use of a virtual world to develop nursing skills. In A. Naweed, L. Bowditch, & C. Sprick (Eds.). *Intersections in Simulation and Gaming: Disruption and Balance* (pp. 33-45). Singapore: Springer. https://doi.org/10.1007/978-981-32-9582-7_3

Students and academics perspectives on creating an avatar for the purpose of learning are revealed in the themes 'Looks are important for effective learning' (students) and 'Working in SL' (academics) and are collectively presented as this final category.

Whilst receiving training and delivering feedback to students during learning activities, academics represented themselves with an avatar they had created. Findings about this align with the work of Mancini and Sibilla (2017) where offline characteristics are often shown to be a starting point for avatar creation. Academics dressed their avatars (their 'skins') in business attire as is appropriate for a nursing academic. As is common in real-life, there were comments about what each other's avatar looked like, but these were limited to comments to a focus on hair styles and clothing choices. This reflects day to day interactions between colleagues suggesting a similar set of social norms were at play.

Further to this, several students created avatars that represented characteristics of themselves. This is clear in the following statement where the student describes 'dressing her up', it sounds almost like a reference to child's play or a maternal reference. "I don't want to

be someone else so that's why I dressed her up to look like me so I don't have to be someone else. It's just me going in there" (Student I).

Academics had patient avatars (skins) created for them to use when working with students in character. Patient avatar skins were designed by the virtual learning academic lead and represented a wide cross section of society. These represented varied age groups, ethnic backgrounds and social status.

All academics expressed enjoyment when 'being' their patient avatar for the first time. They were all interested to see what each other's avatar looked like and walked into each other's virtual assessment-come dressing rooms just to see what the other's appearance was. Most of them would do a twirl around and adopt the voice of the character they were role-playing and they would laugh. "it was like they were excited children in a dress-up shop" (Researcher field notes).

Researcher field notes denoted various comments from academics regarding their approval about their patient avatar's appearance. Comments largely focused on the attributes of the patient avatar; some were qualities that the academic did not possess in real-life though would like, such as "Check out my boobs" (Researcher field notes*)* and others were attributes that the academic still wanted represented in their avatar and so made approving comments such as "Good muscle tone" (Researcher field notes).

All students were asked to create avatars that resembled human form and for their assessments, they were encouraged to wear nursing scrubs. Some students spoke about their avatars as though they were more than a representation of themselves but, rather, they were an extension. It was clear that the visual representation of the avatar enabled a strong sense of connection between avatar and owner. It is not surprising that the visual representation of the student's own avatar was important to them also.

Other students enjoyed the creative opportunity that building an avatar provided. Some students spoke of spending 'hours' creating their avatar profile. Interestingly, the following student referred to the avatar as a 'person', suggesting an association or personal ownership between human and avatar, and thus experiencing a sense of immersion in the activity. They said *"*I enjoyed building my own person*"* (Student F).

A particular academic told of a time about when she thought she would be role-playing a patient avatar named 'HokiSun' (who was from an Asian background). She had rehearsed an accent and particular actions to do in preparation for when in-character. On the scheduled day, another academic had HokiSun's skin leaving the more rehearsed academic feeling disappointed because she had not prepared for another patient and she did not sense the same strong connection with 'them'.

Another academic explained an awkward moment that highlighted feeling immersed when in SL and demonstrated self-presence.

> Yes, I did become immersed, I did. I was surprised. Originally my avatar didn't have any clothes on and I actually felt really embarrassed (laughs). It surprised me. I do feel that I did become immersed. I cared about my avatar—you know what I was wearing (Academic D).

This level of belief was seen to have crossed the digital realm and into a 'reverse' reality for several academics such that they were behaving in real-life as should the avatar in the virtual world. An academic spoke about role-playing a patient character with an arthritic knee. Her real-life 'self' would rub her knee whilst her face would grimace.

Another academic spoke about being embarrassed by seeing a student's monster avatar groin. It is not clear whether this was an awkward moment for the academic because of a perceived inappropriate student-teacher relationship or if it was seeing the groin of another character. This speaks both to the transference of social norms to the virtual environment and the notion of social presence.

> Most people looked like a nurse um but one of them was so over the top you know like a monster with a tutu and (giggle) remember I was telling you about that and it he sat down ….yeah....and then there's this groin exposed and that's the camera view and...giggle...and then I had to look away from the screen because I couldn't do anything seriously looking at this character that was all...giggle...all hanging out and meant to be the nurse! (Academic C).

Some of the academics described what they believed to be examples of students being immersed or displaying social presence. One particular reflection shared by an academic demonstrated that the student avatar responded naturally, albeit inappropriately for a nurse, by forgoing any assessment measures and tending to the needs of the avatar patient.

> I remember once—obviously I was crying in the scenario and the poor student—without any assessment she rushed in and just wanted to fix it. And, of course, you don't get to find out their thinking until after it and she was like 'I just couldn't bear to see you in pain'. Which was a great lead in to say you always need to do an assessment. And then determine your actions—you know it was an acute care scenario (Academic F).

Here, the student demonstrated immersion and presence by enacting perceivably real-world reactions to virtual events. Seo, Kim, Jung, & Lee (2017, p. 121) described this type of user online presence as when the "virtuality of self has become unnoticed". Several of the academics acknowledged that not only were many students' inworld behaviours appropriate for real-world responses, but they matched the real-life persona of the student they had witnessed in the on-campus classroom. In other words, avatars acted the same as their students.

Apart from demonstrating spatial awareness, witnessing socially polite gestures like apologising for bumping into each other, academics spoke about other common attributes that were represented in individual avatars. A confident and conscientious student translated to a

confident avatar. Comparisons of results for the formative assessment (SL) and real-life summative assessments for these students attests this notion. Whilst this same measure could generally be applied to those students who performed poorly, a number of academics spoke about students with poor grades who lacked confidence when on-campus who transformed when in SL.

> She would come into the lab—she is pleasant, polite, superficial with others. A little bit socially inept at times but you could tell she was uncomfortable with her peers. And she did very, very, very well yeah. Having that anonymity of the screen… To see a super different kid compared to her real-life person. I definitely thought oh yes she was definitely different. There was a lot more to her once you scratched the surface with her (Academic G).

Some academics tried to reason this behaviour given that some students performed "better in the virtual environment than actually in the real-world*"* (Academic D) by suggesting that SL provided a sheltered bridge to access the ability to perform appropriate nursing interventions and the conviction to make clinical reasoning decisions. The anonymity of the screen provided those lacking confidence the protection and self-belief to speak with others and confidently interview patients. It was observed that SL provided the bridge between on-campus learning and practical experience.

> I think it gives them that confidence to speak to a patient. You know some of them have issues speaking with people and asking questions and I think, SL whilst it's not totally realistic it's realistic enough that makes it believable (Academic G).

Perhaps a more poignant example of the strength SL gave to some students enabling a heightened learning experience is taken from the field notes during participant observation and the ensuing conversation with a student. These clearly demonstrated a change in learning style; from a real-world non-engaged student with no classroom participation to one of heightened engagement and enthusiasm. The situation depicted a student who was physically

inept, dressed down in the real-world, and was non-participatory during on-campus classes. This presentation of self was transformed inworld to dressing like a ninja warrior inworld and dominating virtual discussions. When asked why the student was so vocal in SL, the student replied with the following: "SL lets me be the me I want to be" (Researcher field notes).

This notion of a sheltered reality is pivoted when another student explained the value of learning using SL was a closer reflection of reality than on-campus simulations. This student proposed that virtual simulations were a more realistic representation of their own nursing capability because they were acting as themselves through the purposeful actions of the avatar. "I feel like in the labs if I had to role-play, you know come and consult with a patient, I feel silly because I am pretending" (Student D).

Visual and behavioural representations of self in SL were vast across the student group. Whilst there was an underlying element of fun for students, despite alternative looks and capability, students treated this learning with academic earnest. Perceptions of people who use inworld gaming are often nerds or as deviant because of the 'adult' content that is readily available. When the virtual world is mixed with a nurse, it is not surprising (and disappointing) that one student's friends saw this as an exercise in deviance rather than a learning opportunity. "Well what I was telling people was that I was in SL dressed up as a nurse and they thought that was hysterical and perhaps a little naughty" (Student A).

6.9 Summary

This research sought to understand the nature of learning in a virtual world where the perceptions of undergraduate nurses, higher education academics and clinically practicing Registered Nurses. Results have been communicated using quotes from all participant groups including researcher reflections. Additionally, field notes and examples of artefacts such as photographs and corporate documents have been presented and confirm the collection and analysis of data during this research process.

Data was reviewed across and within the categories and synthesised to establish the clear findings of this research. To assist with the communication of them, these findings are presented in a concise table (refer to Table 7). Denoted on this is the type of finding, a brief description and associated category. The findings are discussed in Chapter Seven: Discussion in order of their presentation in Table 7.

These are broadly associated with each systems of the learning ecology framework.

Table 7. Concise table of findings.

Type of finding	Description	Related category (major)	Related Category (minor)
Profound and unique	Second Life supports the establishment and development of peer relationships.	Virtual learning is connected learning.	
Profound and unique	Second Life can enhance pre-existing real-world relationships when students share learning experiences and may actually augment new communities of learners.	Virtual learning is connected learning.	
Profound and unique	Second Life enables the delivery of content that is scaffolded across the Bachelor of Nursing program.	Experiential learning can be virtual.	
Profound and unique	Second Life enables reflective practice.	Experiential learning can be virtual	
Profound and unique	Registered Nurses support the use of Second Life as a teaching platform	Seeking improved learning outcomes: the call to improve the Bachelor of Nursing	Technology enhanced learning: SL in practice.
Supports existing research in wider literature	Interactions in Second Life enable academics and students to build stronger real-world relationships.	Virtual learning is connected learning.	
Supports existing research in wider literature	The relationship between the learner and the characteristics of their avatar is relevant to the experience of learning.	Looking good sister	Feelings are important when learning
Extends previous nursing research	The sequential development of complex nursing skills can be achieved in Second Life and then reassembled in the clinical setting	Experiential learning can be virtual.	
Extends previous nursing research	Second Life is a fun and engaging platform in which to work and learn.	Feelings are important when learning.	Technology enhanced learning: SL in practice.

Type of finding	Description	Related category (major)	Related Category (minor)
Extends previous nursing research	Registered Nurses are disillusioned with higher education institutions	Seeking improved learning outcomes: the call to improve the Bachelor of Nursing	
Supports existing nursing research	The relationship between learner attributes and avatar capacity is relevant to the experience of learning.	What influences the adoption of technology?	
Supports existing nursing research	Second Life can effectively mimic or effectively replace certain components of experiential learning.	Experiential learning can be virtual.	
Supports existing nursing research	The capacity for SL to provide a platform for students to learn how to nurse is not always initially accepted as a valid and appropriate approach.	Does online learning have a place in contemporary nursing education?	Feelings are important when learning and Technology enhanced learning: SL in practice.
Supports existing nursing research	Second Life is a platform that can provide rehearsal space that is safe causing no patient harm. The presence of educators makes the space safe emotionally for the learner.	Experiential learning can be virtual.	

Chapter Seven: Discussion

This research has been undertaken at a time when the integration of technology across the spheres of health and education is occurring at an unprecedented pace. Indeed, reconciling the nexus between the needs of learners, pedagogical practice and health workforce requirements, emphasises the dimensional and complex nature of the learning environment.

Findings arising from this research, borne from the categories presented previously, are developed and integrated in this chapter. These are ordered, such that those that are the most profound and unique are presented initially, followed by the findings that extend or confirm existing literature from wider disciplines. Finally, findings that either extend or confirm previous research in the field of nursing are further contextualised.

7.1 Unique and Profound Findings

7.1.1 Second Life supports the establishment and development of peer relationships.

A profound and unique finding of this research is that learning connections can be established and maintained in SL. These interactions have been shown to have an immensely positive impact upon the reported experience of learning. Just as elements within an ecology of learning model are seen as boundless (Jackson, 2016a), so too are the possibilities of virtual connections when learning using SL. Indeed, all participant groups were clear that interrelating in a virtual space was a significant component of their experience.

In their most fundamental form, the connections involved the student and academic participants as avatars. They conversed with each other or relayed information, in couples or groups. These connections emulated the real-world, casual, peer-to-peer relationships that one

might see on any higher education campus. Salmon et al. (2010) would associate these relationships with the second stage of a scaffolded model for online learning. During this stage, learners develop key relationships that assist in building their virtual learning communities.

Clinically practising Registered Nurses (RNs), many of whom had earlier lamented the lack of cohesion and camaraderie between higher education-based nursing students, recognised that SL could assist contemporary students in forming these close relationships, developing somewhat of a virtual relational agency (Larsen, 2019). Students agreed that, across the multi-campus higher education institute, SL had facilitated and maintained close associations, and even friendships with peers. In particular, they found these connections to be extremely conducive to productive, convivial group work.

Given close proximity in the ecosystem, an ecological perspective acknowledges the support that friendship or study groups provide to the individual learner (Jackson, 2016a). Perhaps this is why the RNs in this study felt so strongly that contemporary students desperately need the kinship of peers. Conceivably, the RNs were focussing on previous negative experiences, when they themselves were students, where because of feelings of isolation, the only ones who understood their situation were their peers. A recent study confirmed the notion that lateral violence and mistreatment of graduates was a part of the culture of nursing (Strouse & Nickerson, 2016). It is unfortunate that the cycle of mistreatment of students persists to some degree however, the potential to enable support via developed relationships in SL is opportune.

7.1.2 Second Life can enhance pre-existing real-world relationships and may augment new communities of learners.

Parallel to this initial finding were examples of pre-existing, real-world connections that were, somewhat surprisingly, enhanced by sharing virtual experiences through SL. For

example, via SL, students were able to bring a portion of their nursing education into their lounge room and involve family and friends in their experience of learning.

This additional, profound and unique finding also suggests that learning the skills of nursing using SL may potentiate the development of whole communities of learners that can cross the boundaries of virtuality and reality. An ecological perspective acknowledges the importance of human resources, such as friends, peers and family, in achieving learning and the development of aspirations (Richardson, 2002). Whilst not established in nursing literature to-date, this revelation is consistent with the principles of connectivism in which Boitshwarelo (2011) proposed that social and cultural connectedness between users does indeed augment the uptake of knowledge.

The outcomes of this research also make it clear that SL networks can satisfy the desire of learners for 'relatedness'; as identified by Ryan and Deci (2000), this is a key psychological need that is a foundational motivator for learning. The examples described above of learning connections forged through SL experiences suggest that the use of this platform can elicit, sustain and enhance intrinsic motivation. External contingencies did not stifle the inherent drive of students to learn.

In addition, the sense of relatedness that SL is shown to augment, can facilitate the process of internalisation, or the movement from external to intrinsic motivation. Ryan and Deci (2000) described this as essential to the development of autonomous, lifelong learning. This shift was evident during the research, when, for example, some academics met with students in SL after hours in less formal, didactic interactions. In comparison to those who had engaged in the after-hours virtual meetings, these academics reported that there was an increased engagement in the course content and heightened participation during real-life classes.

7.1.3 Second Life enables the delivery of content that is scaffolded across the Bachelor of Nursing program.

With a focus on the skills of nursing, another unique and promising finding of this research is that SL is able to facilitate a scaffolded approach that is meaningful and progressive across the curriculum. Because SL was embedded across the Bachelor of Nursing (BN) program, it served as a bridge between theoretical learning and practical experience. For example, the learning requirements for a complex skill, such as conducting patient consultations, discernibly rose in difficulty across the discrete learning environments. These increased from tutorials, to simulations in SL and then to professional experiences.

All participants clearly articulated the benefits of this approach when learning the multifaceted skills of nursing. Clinically practising nurses expressed relief that SL was able to provide a necessary articulation between learning theory and skills on-campus and implementing them in professional practice. They had, in unity, expressed a concern that nursing students do not get sufficient exposure to real-world clinical experiences. They did, however, feel that because SL was able to replicate these sorts of clinical scenarios, in which the students could immerse themselves and rehearse as often as they desired, their capabilities would be much sounder as they embarked on their clinical placement.

Higher education academics agreed with the practising nurses that SL provided an essential learning space between the theoretical and clinical practice environments. They also saw that the rehearsal of simulations using SL would provide students with the opportunity to apply theoretical knowledge and cultivate practical skills. This is particularly beneficial for students prior to confronting real-life, high-stakes situations during clinical practice.

This finding provides an example of what Vygotsky (1974) described as an instructional scaffolded approach to learning within a constructivist paradigm. Within this, interactions with a more knowledgeable other (MKO) are significant to the learning process (Pea, 2004).

For example, during this research, exposure to a given nursing skill began with a rudimental presentation in a tutorial or lecture. This content was then further developed in an on-campus simulated learning environment (SLE) and further refined in a virtual simulation in SL. Finally, students continued to advance their capability during clinical practice. Each planned learning event incrementally increased the skills and knowledge of the learners. The MKO in each of these learning environments will likely differ and could be a tutor, a peer or a practising RN.

7.1.4 Second Life enables reflective practice.

An additional, unique and profound finding of this research pertains to a central component of experiential learning. This research established that SL enabled reflective practice after and during virtual learning opportunities. This learned ability to continuously, consciously and critically attend to our actions and underlying assumptions is championed in nursing as a skill that can strengthen one's identity (Chong, 2009), and has been linked to the enhancement of clinical skills (Bulman, Lathlean, & Gobbi, 2012).

After a clinical event has occurred during practice, nursing students are encouraged to reflect by considering an incident, as well as their thoughts and actions in the given context. Experiential learning theory (ELT) is said to promote reflection and the ensuing abstract conceptualisation assists to develop insight and understanding (Kolb, 1984). Ultimately, this has been determined to develop the skills and knowledge of learners.

However sound this practice is in theory, RNs regretted that there is not always time after real-life, clinical events to reflect, and so supported the use of SL to facilitate the learning and rehearsal of this important self-improvement strategy. Academics and students alike acknowledged that reflection was being utilised by learners post SL simulations. In point of fact, some academics witnessed the reflective practices of students up to two weeks after

the virtual events. Due to the capability of pausing a simulation, students openly spoke about the benefits of using SL as a learning platform, as it allowed reflection before continuing.

As all of the participants in this research equated learning in SL with important aspects of experiential learning, including reflective practice, there must surely be an incentive for its adoption in nursing education. When in the clinical environments on-campus or healthcare facilities, there was a tangible sense that these virtual learning affordances served to improve student competence and confidence. For example, academics and students valued the virtual opportunity to rehearse patient consultations. The unpredictability of patient responses in these virtual interactions was appreciated and equitable to real-world experiences. Perhaps one of the most exciting applications of this finding is that SL can offer learning opportunities through reflection that are sometimes not possible during real-world practice.

7.1.5 Clinically practising Registered Nurses support the use of Second Life to assist nursing students to develop skills.

An additional unique finding revealed that practising nurses are motivated to participate in curriculum development and delivery and this extends to support the use of SL as a learning platform. Furthermore, their understanding and acceptance of SL as a teaching platform for nursing students has not been previously captured in the literature. Given their resounding appreciation of the transferability of the skills and knowledge rehearsed in SL to the healthcare environment, this finding, and this acceptance of technology as an educational strategy by nurse clinicians suggests that practising nurses themselves would promote learning via SL. The optimistic tone of this finding is a little mitigated, however, by the revelation that some of the practising nurses asserted euphemistically that there were quite a few students who, with or without the use of SL technology, simply "[did] not have the capability to function well in a nursing environment" (Nurse B).

7.2 Findings that Extend Previous Research in Wider Literature

7.2.1 Real-world relationships between nursing academics and students are strengthened due to interactions in Second Life.

A finding from this research that supports existing enquiry in a discipline other than nursing is that real-world relationships can be enhanced due to interactions in SL. For example, the inherent flexibility of the technology enabled some academics to meet with groups of students inworld, outside of class and working hours, so that they could learn to navigate SL together.

Those who participated in these shared, informal experiences of visiting the virtual worlds, found that time spent in the virtual space, when conversations were not restricted to course content, enhanced the development and strength of their learning connections. These virtual meetings resulted in the development of real-world associations between the teachers and students that were described as being richer and more productive than is typical. Indeed, some voiced, this may not have been possible without SL.

In recognition of the profiles of contemporary learners, many academics perceived that SL helped them to develop relationships with their students in new ways, where they came to appreciate them as people who have full and demanding lives outside of campus. This finding supports Seely Brown's (2000) description of the behaviour of the interdependent elements of an ecology of learning. In this case students and academics, that are singularly dynamic though capable of evolution generated by overlapping and cross-pollinating. These results also extended the work of Teräs et al. (2011) who discovered that SL reduced the hierarchy between student and teacher, demonstrating that productive, respectful working relationships can be formed.

7.2.2 The relationship between the learner and the characteristics of their avatar is relevant to the experience of learning.

Another research outcome was that the relationship between the learner and their avatar was relevant to the experience of learning. This aligned with existing literature, which supported the notion that users formed complex and varied relationships with their avatars. Projective identity theory explained this phenomenon and asserted that an avatar is either a representation of the user, with some modifications, or is a projection, aimed at controlling the perceptions of other people (Triberti et al., 2017). In essence, these are avatar creations that represent the actual-self (albeit modified) or the ideal-self (Mancini & Sibilla, 2017).

Overall, these findings are in accordance with those reported in the wider literature in that the participants in this research viewed their avatars from many perspectives. As has been previously described by Liao (2011), some of the participants in this research had a type of maternal relationship with their avatar, or similarly, perceived their avatar in a doll-like way; as something to be dressed-up and played with. Behaviours of others in this research more closely aligned to descriptions by Bessière, Seay, and Kiesler (2007) where their avatar was viewed as an entity that represented themselves and had a strong psychological association. Others still, saw their avatar as a representation of an idealised or entirely different self, an occurrence previously identified by Mancini and Sibilla (2017).

Students demonstrated a broad range of avatar embodiment. For example, some students spoke about ‘dressing up’ their avatar to be what they wanted them to be or created an obvious representation of their real self. One student demonstrated what Triberti et al. (2017) described as a clear example of impression management, when they customised their avatar to possess the physical features that they did not have. This virtual veil extended to their choice of clothing and ultimately influenced the personal characteristics of the user themselves.

Some of the participants were also seen to have richer experiences when they chose to be represented by an ideal-self avatar, however comparative learning outcomes were not measured. The modification of personal demeanour and behaviour in-line with one's avatar characteristics, whilst new to nurse education research, has been extensively researched in the field of gaming (Hobart, 2012). Participants who created ideal-self avatars were shown to demonstrate greater achievement of learning outcomes. When compared to their peers who had developed real-self avatars, this achievement was seen to be associated with higher levels of involvement, disinhibition and enjoyment.

Students and academics in this current research became so immersed that, whilst in the virtual world, there was almost no disconnection between the self and the avatar. Indeed, the research demonstrated immersion to a point where the technology became inconspicuous and unobtrusive and, as per Seo et al. (2017), "the virtuality of self [had] become unnoticed" (p. 121).

Many examples of this phenomenon were yielded. One student, who appeared withdrawn and reticent in the real-life classroom, had much more bravado and engagement as their ideal-self avatar. Another student demonstrated a high level of affective engagement in the virtual world, becoming genuinely alarmed when their *virtual* patient was suffering.

Interestingly, students and academics alike were so seamlessly subsumed into the SL experience that there was a blurring between their avatars' behaviours and the creator's real-world responses. For example, when one academic's avatar was inadvertently naked in front of a group of other avatars, the academic expressed feelings of embarrassment (in the real-world).

These findings highlight, that learning can be achieved in SL and is positively influenced by certain characteristic-capabilities of the avatar. Furthermore, it is apparent that the artificial, intangible world of the SL learning matrix was perceived by the participants in

this research to be intensely real. So much so, that it was possible to become immersed and demonstrate real-world reactions and actions, to a simulated clinical scenario.

7.3 Findings that Extend Previous Nursing Research

7.3.1 The sequential development of complex nursing skills can be achieved in Second Life

Previous nursing research has certainly established the ability of students to transfer learned virtual nursing skills, such as communication (Sweigart et al., 2014), and intubation (Chow et al., 2012) into the clinic.al environment. Also, previous inquiry has established ways of bridging the gap between nursing theory and practice (Irwin & Coutts, 2015; Tilton et al., 2015). This current research, however, has generated insight into the transfer of learnt skills, positioned in the broader context of a nursing program. The idea that SL is a platform, where content can be scaffolded to achieve the learning objectives related to practice, is new to nursing research.

SL was developed as an educational space in its own right and utilised for learning complex nursing skills. The platform offered learners simplified simulations of patient interview and consultation. These served as adjuncts to on-campus learning activities and preceded clinical practice. Students identified that using SL provided them with the opportunity to practice smaller segments of a complex skill, such as therapeutic interactions with patients. Practising nurses and academics agreed that learning in SL essentially allowed the students to broach the material sequentially and then bring the components together during clinical placement.

7.3.2 Second Life is a fun and engaging platform in which to work and learn.

The results of this research go beyond previous findings reporting students as having ‘fun’ inworld (Aldosemani, Raddaoui, Shepherd, & Thompson, 2016; Sweigart & Carlton,

2014; Tandy, Vernon, & Lynch, 2017). These studies did not expand to reflect the reasons for these positive emotions associated with a learning experience. Further, no studies to date have considered the reactions and perceptions of the academics and practicing nurses. This research has established that SL is a fun and engaging platform in which to work and learn. Essentially all of the participants who interacted inworld experienced heightened positive emotions directly related to these activities.

Academics recalled teaching in SL with a fondness that the researcher had not previously witnessed when academic peers were speaking of work. Their associations of happiness and affirmed expectations were a motivating factor for participating in the environment. Indeed, as previously mentioned, meeting students after-hours to share inworld experiences, as a way to encourage wider participation, speaks to the confidence of the academics in the use of SL as a teaching platform.

Students shared similar sentiments of enjoyment as the academics, but for more varied reasons, such as enjoyment in creating an avatar, sharing learning activities with family members and establishing new peer relationships. Further, there was a perception amongst some student participants that interactions in SL provided distance from the rigours of theoretical academia despite the completion of actual assessments inworld. Building on the phrase "the virtuality of self had become unnoticed" by Seo et al. (2017, p. 121), made in reference to the user's presence, one might submit that in this instance, the virtuality of self had made *learning* unnoticed.

Practising nurses related to this desire for reduced pressure having witnessed (and for some—undergone) the stress experienced during clinical placement. Whilst not having had the practical experience of interacting in SL, and though not openly interested in fun when learning, they perceived the simulations to be valuable in terms of heightened engagement and the predicted increased learning outcomes.

7.3.3 Clinically practising Registered Nurses are disillusioned with higher education institutions.

This finding builds on existing nursing literature, which identifies the bullying of nursing students and graduates by RNs as a relatively widespread, though poorly understood, phenomenon within a supposedly caring profession (Smith, Gillespie, Brown, & Grubb, 2016). A plethora of research has sought to establish a rationale for this behaviour. Strouse and Nickerson (2016) for example, recently described these negative behaviours from RNs, with the phrase 'eating our young'. They found that RNs' negative treatment of students was ultimately to protect their patients' wellbeing.

This current research submits that the negative behaviours that RNs have towards higher education institutes, can be explained in part as the projection of the nurses' negative feelings onto students and new nurse graduates. The feelings expressed by practising RNs in this research are of disenfranchisement from the decision making in nurse education and criticism of higher education institutions for their perceived low standards and deficient teaching practices.

Indeed, some of the practising nurses expressed a disappointment in the higher education system. They perceived this as manipulating students through a program, simply for the sake of numbers, regardless of whether or not they had any aptitude for nursing or were capable of attaining a satisfactory level of proficiency or professionalism. The research exposed an undercurrent of negativity among some practising nurses who clearly held pessimistic attitudes towards nursing students and graduates who were, in their estimations, not able to work effectively. However, it must be seen as extremely positive that they were convinced that SL should be trialled to determine if it could compensate for their perceived shortfall in the education of nurses.

It is possible that these attitudes of frustration and perhaps powerlessness, expressed by practising nurses, underlie the reports of poor treatment of students during clinical experiences. Students expressed feelings of alienation and stated that they were subjected to undue criticism when out on clinical placements. This is an example of the push-pull dynamic of elements in a learning environment, which can lead to ecological disruption. Findings that Support Existing Nursing Research

7.3.4 The relationship between learner attributes and avatar capacity is relevant to the experience of learning.

The interactions between certain elements have been demonstrated to influence the development of an online presence for nursing students (Chow, 2016; Chow et al., 2012). These are the computer self-efficacy of the users along with the perceived; usefulness of the technology, ease of adoption of the technology and the social pressure or subjective norms. That is, if a user finds salience in the technology and wields it confidently, their willingness, and indeed ability, to suspend reality and invest in the virtual environment is greatly enhanced (Chow, 2016; Tokel & İsler, 2015). This is to the extent, that they become wholly immersed and prescribe to virtual world's authenticity.

The opposite is also true such that a learner might assign a lower perceived usefulness to an educational technology and therefore alter their experience of learning. For example, during this research, participants who challenged the relevance, wisdom and efficacy of adopting SL as a learning strategy within the curriculum were reticent to learn how to use it and so, of course, were less effective in doing so.

Predictably, those who had a low computer self-efficacy were intimidated and not initially enthusiastic about the use of SL as a learning platform. For example, some students commented that they had no technological proficiency beyond games like Candy Crush and were convinced that the use of SL as a teaching and learning tool would be an insurmountable

challenge. The same students, however, were able to effectively learn using SL. Conversely, those students and academics who, from the outset, perceived a greater benefit from learning using SL experienced an engrossing and gratifying online presence.

Chow's (2016) notion of the impact of subjective norms upon learning aligns well with the concept of an ecology of learning. In a learning environment, people of significance are closest to the learner; this includes family and friends, while peers and teachers exert their influence from a realm slightly more removed. It was the proximity of this wider, though connected network that had an effect on the learning experience of the individual in this research.

The observation of students becoming increasingly engaged when learning inworld with motivated academics (as described previously in section 7.1.2) is one example of the effects of the subjective norm phenomenon.

7.3.5 Second Life can mimic or effectively replace components of experiential learning.

Experiential learning in nursing is traditionally considered solely the province of the healthcare institution to which students are assigned on clinical practice. More recently though, there have been studies which support the use of real-life simulations as another method for offering students experiential learning opportunities (Gore & Thomson, 2016). Sweigart et al. (2014) and Tilton et al. (2015) have established that SL can replace, certain components of this type of learning. Additionally, Menzel et al. (2014) advanced these findings in a study with nursing students in a virtual simulation based on poverty. They demonstrated that the intellectual and emotional domains of students were altered after learning using SL.

Academics, students and practising nurses who participated in this research were all clearly able to perceive the similarities of experiential learning between learning in SL and

real-life modalities. As is the case with real-life experiential learning in the clinical environment, SL was also seen to offer students an environment that was challenging yet unpredictable. However, unlike real-life, SL also offers students learning opportunities that are replicable, manageable and safe.

When using SL, academics referred to uncertainty around whether students would be able to achieve the course learning objectives and adjusted marking rubrics to accommodate for this. This was not described as a negative. Moreover, the authentic and immersive experiences in SL, which compare positively with real-life learning opportunities, strengthened the decision of the staff to use SL as a teaching strategy, given these projected, yet undefined benefits.

SL was certainly not perceived to be a panacea, however, and in fact all participant groups agreed that some skills simply could not be taught using SL. For example, consistent with existing nursing research, there was a consensus across all participant groups that practical skills such as lifting a patient or the administration of intravenous medication could not be taught or rehearsed successfully in SL.

What was equally clear, however, and also in alignment with nursing literature (McCallum et al., 2011; Sweigart et al., 2014), was the realisation by all of the participant groups that high-order, clinical skills such as communication, prioritisation and decision making skills were appropriate to teach, rehearse and maturate in the virtual environment. It is these skills in particular that the practising nurses, in this research and more widely in the literature (Freeling & Parker, 2015; Walker, Costa, Foster, & de Bruin, 2017), have identified as lacking in new graduates.

7.3.6 Second Life is not always initially accepted as a valid, teaching approach for undergraduate nurses.

Previous work in nursing has revealed findings where some nursing students, who lacked a belief in a learning platform, were actually surprised by the transferability of the skills learned in the virtual environment (Evans & Curtis, 2011; Kidd et al., 2012). Parallel to this, is a finding of this current research that SL was not always initially accepted as a valid approach to learn 'how to nurse'. RNs along with some students initially questioned the value and transferability of technology use in education for a hands-on profession such as nursing. Virtual simulation was seen as the antithesis of 'hands-on' and the idea of students attaining practical competence in an unreal-world was considered improbable at best. Some students even objected at the outset that they should be looking after real patients, not virtual ones.

7.3.7 Second Life can provide emotional safety for students.

The use of SL has been previously identified in the literature to result in increased undergraduate nurse clinical confidence and proficiency in specific areas of patient care (Tilton et al., 2015). This growth in confidence has been attributed to the platform's ability to provide a safe, reproducible and lower stakes learning space to rehearse in simulations that largely focus on developing clinical decision-making and communication skills (McCallum et al., 2011).

All of the participants in this research were confident that the growth of clinical competence experienced by the undergraduate students was specifically related to the rehearsal of simulations using SL. For example, students who had rehearsed communication skills in SL, felt a heightened self-assuredness, and were better prepared to interact with staff and patients when on community placement, where they were meeting and interacting with a range of new patients each day.

Academics also witnessed improvements in students' decision-making skills and communication abilities when using SL. Indeed, some students actually performed better in SL with their virtual veil, than in real-life assessments. Students concurred with these findings and appreciated the additional, safe rehearsals they had received in SL prior to embarking upon their clinical practice rounds.

Some students elaborated on this by explaining that the sense of safety they experienced in SL was not just in a professional sense but included a personal feeling of security and support during the learning process. The relative calm and orderliness of the virtual world, compared to the chaos and unpredictability of the clinical environment, conferred these feelings of safety upon students. The removal of any actual threat to their virtual patients, allowed them to function more freely and focus upon learning. This was also greatly appreciated by practising nurses who celebrated the notion that the outcome of this virtual rehearsal was transferable and would result in improved learner clinical competence.

7.4 An Ecology of Learning Model for Undergraduate Nurses Interacting in Second Life

A student, via technology is liberated from their dependence on the classroom, and gains an unlimited capacity to source learning material. To support this, an ecology of learning framework (Bronfenbrenner, 1976) was adopted to underpin this research. This conceptual approach was chosen, due to its unique affinity with the attitudes and expectations of the connected contemporary learner. The ecology acknowledges that learning is an expansive activity and it enfolds a multitude of learning modalities around the central individual (Barron, 2006).

Siemens (2008) states that, given the amplified access to technology that contemporary learners now experience; the traditional relationship between educator and student has altered entirely. Therefore, an ecological framework supports the notion that the 'big bang' of learning resources has occurred, reinventing the relationship and providing an explanation as to why students now seem to inhabit a different universe. Framing this complex, diverse and changing environment through this lens has enhanced an appreciation of the centrality and uniqueness of the individual learner and the interdependent and always expanding, diverting, discriminating and re-populating nature of their ecology.

Figure 9 depicts the integration of the research findings with the framework. This depicts and encapsulates a broader interpretation of the experience of an undergraduate nursing student who is learning in SL.

Representative of the primary learning relationships and interactions, the microsystem now incorporates avatars, along with peers and family, academics and RNs. The avatar is viewed as a separate entity to the learner and represents the learner's individual avatar as well as other avatars that the learner may interact with.

Signifying the major settings where associations within the microsystem are realised, the mesosystem now includes SL as well as the previously identified higher education setting and the clinical environment. All of the structures within the microsystem (individual, avatar, academics, RNs, peers, family and friends) connect in some way at this level in these specified contexts.

Importantly, findings from this research indicate that technology should be considered together with the existing structures of the exosystem, and in doing so gives rise to a deeper understanding of their functions in relation to learning in SL. For example, due to what they perceive to be a lack of integrity in the process of nurse education, RNs are expressing disillusionment with the higher education system. If this is based on beliefs, it may explain the negative impact of the behaviour of RNs towards students in the clinical environment. A more positive example of these interactions in the exosystem is when academics and students use technology interacting in the virtual world of SL and gain increased confidence.

Representing the widest and most distant system, the composition of the macrosystem remains comparable to the research framework however, again, and due to its cascading influence, the findings from this research help to inform interactions between the other layers. For example, core to this research, the delivery of healthcare and education are changing due to the widespread adoption of technology.

Change such as this, at the outermost layer of an individual's ecology of learning can encroach upon or promote learning. For example, within the microsystem, the research supports that the use of SL as a learning platform can enhance the experience of learning. Yet some interactions in the mesosystem are not as positive. For example, the move by the profession of nursing to higher education has potentially created a hostile environment for students when they are on placement.

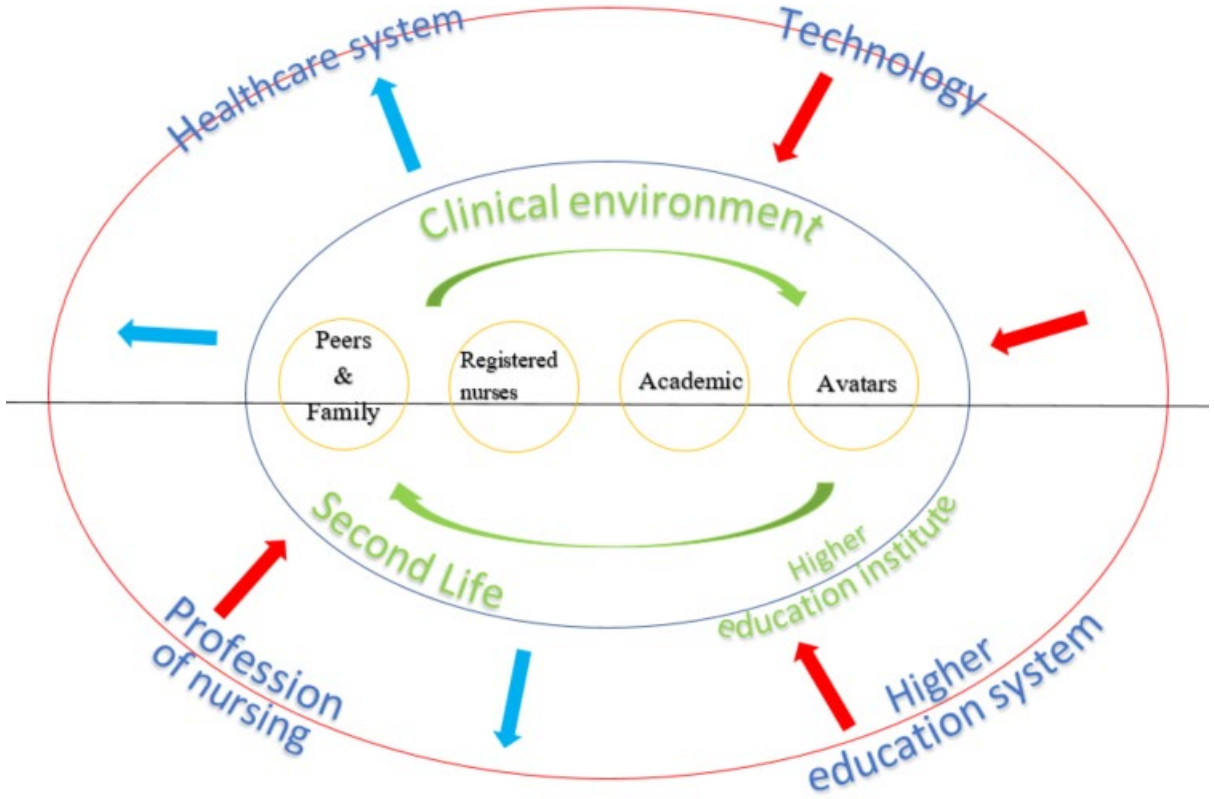


Figure 9. An ecology of learning model for undergraduate nursing students interacting in Second Life. The five systems of the ecology are depicted. Content within each system is described in the colour coded side panel.

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Chronosystem:

- Adoption of technology in healthcare and higher education
- Nurse education in higher education
- Digital natives learning alongside digital immigrants

Macrosystem:

- Healthcare and higher education influenced by use of technology, staff and fiscal resourcing
- Continued discourse regarding educational practices specific to nursing.
- Nurses position as a profession within the healthcare context.

Exosystem:

- RNs disillusioned with higher education
- Academics challenged to deliver curricula where needs of healthcare and higher education are met.
- Workforce needs alter learning experience for students and expectations of graduates

Mesosystem:

- RNs engagement with curricula
- RNs and academics supporting the use of SL for learning nursing
- RNs and students working relationship during clinical placements

Microsystem:

- Establishment of peer relationships
- Strengthened existing relations with family & peers inworld and in SL,
- Scaffolded and reflective learning practices
- Relevancy of avatar characteristics and learner attributes
- Avatar characteristics and learner attributes influence the experience of learning

7.5 Limitations

The activities of this research reflect a particular point in time. The period of this research is significant because it is positioned during an evolutionary stage in the use of educational technology and its application to the higher education sector. This means that utilising a virtual world for learning is imbued with specific, cultural manifestations and therefore the specifics of the design cannot be replicated, nor the results extrapolated to another time and setting.

Furthermore, the snapshot of this technological progression via a focused ethnographic study, whilst certainly meaningful, should be understood within the limitations of this methodology. That is, meanings are defined temporally and spatially within a given context. As such, any assumptions about the nature of learning using virtual worlds to other undergraduate nurse cohorts or other disciplines should be viewed in context.

Another limitation of this research could be that the researcher is an experienced nurse academic and was employed to teach undergraduate nurses during the study. It could be considered that the researcher, may not have brought an absolute etic perspective to this study. However, this is an accepted convention of focused ethnography where researcher specific knowledge (Knoblauch, 2005) is assumed given that this type of investigation often occurs in the researcher's own work environment (Higginbottom et al., 2013).

7.6 Embedding Rigour within this Research

Commensurate with qualitative research, and as recommended by Yin (2016), a number of strategies were employed across this research to strengthen the validly of the approach and finding. For example, to ensure that the results, as described, were consistent with the multiple realities being considered, responses from participants were gathered occurred across

four years. Maxwell (1996) stated that this long-term approach yields an in-depth understanding of the research focus through extensive observations and repetition of interviews. Field notes were recorded and captured the researcher's observations and personal reflections on the events. The rich data captured via the use of field notes, observations, interviews and artefact collection underpins the credibility of the study.

To add to demonstrable credibility, it is ideal to seek confirmation of an occurrence, or reported information, from three sources (Yin, 2016), and therefore converging evidence was collected from various sources in order to enact triangulation. For example, it was not uncommon to have members from the same participant group present similar information about a topic, such as when multiple students reported the enjoyment they experienced creating their own avatar. To increase the credibility of a finding such as this, and to further triangulate the emerging responses, the participant groups of academics and RNs were also included, interviewed and observed. For example, academics also shared their perspectives and the researcher observed these participants inworld creating their avatar.

To further strengthen the credibility of this research, and as recommended by Yin (2016), assumptions were comprehensively challenged before being accepted. Yin also recommends double-checking information. This took place throughout the research, for example with convergent interviews. The interviewer undertook rigorous self-reflection to challenge assumptions and additional participant responses were collected to probe for rival explanations.

The researcher undertook meticulous documentation of research procedures. Polit and Beck (2014) recommend this as a quality measure to bolster the dependability of qualitative research. In addition, the comprehensive audit trails are a demonstrable record of the decision making process during the data analysis phase. These audit trails, employed alongside thick

descriptions, increase the transparency of the decision-making and thereby the integrity and value of the assertions which were generated.

Table 1 and Table 2 are examples of audit trails. Furthermore, the provided descriptions and illustrations of procedural methods of analysis, such as the description of the process of shaping of themes into categories, reinforce the dependability of this research.

According to Jensen (2008), the authentic voice of the participants is of course key to the trustworthiness of qualitative research. The researcher was vigilant in ensuring confirmability of such. To support this analytical construct, in order for them to attest to the accuracy of the transcribed account, respective participants reviewed each transcribed interview. As suggested by Maxwell (1996), this validation procedure increases the rigour of the study and eliminated, as far as possible, the potential for researcher bias to seep into the results. Additionally, the audit trails were shared with the researcher's supervisors to establish a consensus of understanding during the data analysis.

7.7 Recommendations from this Research

The studies within this research offer original contributions to knowledge about learning in a virtual world; specifically student nurses participating in Second Life (SL). The recommendations have implications for nurse education. In particular, development and delivery are enhanced when a student utilises an avatar within a higher education teaching and learning context. Importantly, these findings have the capacity to inform future research.

7.7.1 Nursing education development.

This study provides evidence that endorses the implementation of the virtual world of SL into learning in nurse education. After rehearsing inworld, students reported increased confidence and competence with specific, complex, higher-order, nursing skills. Academics, practising nurses and students alike, recognised that embracing SL as an educational technology could reduce the theory-practice gap.

It is time, therefore, that nurse academics redevelop their curricula, in the knowledge that change is in order; that traditional higher education offerings of on-campus learning blended with sequential clinical experiences may be letting students down and, moreover, not meeting the needs the healthcare workforce. The addition of a validated learning strategy, such as SL, could potentiate learning outcomes that are currently left wanting.

Furthermore, it is pertinent for academics to consider curriculum from an ecological perspective. The findings of this research as presented in Figure 9 demonstrate the structures determined to be most relevant to the learner. Conceivably, structures such as avatar, academics, RNs, peers and family will exist in some form in all individual learning ecologies. As such, being cognisant of these structures and their impact on the experience of learning when developing curricula is recommended.

Aligned with previous findings (Onyema & Daniil, 2017) and recommendations from this research, is the endorsement that time and knowledgeable support should be allocated to academics who are in the process of designing content to be delivered using educational technology. This research also supports the need for educators to be adequately up-skilled in the use of SL and particularly how an avatar can be utilised to provide experiential learning. As recommended by Midoro (2013), the professional development of academics that focuses on the confident use of educational technology will promote the effective adoption of it in the classrooms. This will therefore encourage positive engagement by both students and academic peers.

Academics who demonstrate innovation and leadership in the use of educational technology could be further supported to develop higher competency and capability skills. As is recommended by the United Nations Education, Science, and Cultural Organisation-UNESCO, Institute for Information Technologies in Education (Midoro, 2013), with assistance and encouragement, academics will become creators of knowledge and leaders in the policy innovation that pertains to educational technology. Adams Becker et al. (2018, p. 8) concur and call for higher education institutions in general to "advance cultures of innovation" where "faculty and staff be equipped with the tools to spark real progress."

An additional recommendation of this research is to increase the involvement of practising nurses in the development of nursing curriculum. The existence of external, curriculum-review committees is acknowledged, however, there is often a lopsided gradient of influence which leaves the voices of practising nurses unheard, or at least, undervalued. Their vested interest, and key positioning in the multifaceted nature of nurse education, demands their greater, and more instrumental, representation at curriculum development level. Tang (2019) recommends the inclusion of employers in course design and delivery in order to improve graduate employability.

This research verified that practising nurses are neophytes of educational technology and its use in a contemporary curriculum, even though they *were* open-minded about it, and appreciative of its potential. Positioned within the context of this research, where nurses question the integrity of the higher education sector and are disillusioned with graduate competence and professionalism, this recommendation for the use of SL has merit.

7.7.2 Nursing education delivery.

This research demonstrated increased immersion in the learning experienced by those students and academics who had thoughtfully designed their avatar. It is therefore recommended that educators and learners be given the opportunity to create a personalised avatar, in other words, a digital representation of themselves. It is also recommended that this creation task be embraced in dedicated time and with virtual resources. Furthermore, this supports previous research by Hobart (2012), which was able to show a higher engagement and enjoyment using SL among those students who devoted time to developing an idealised self-avatar.

A further recommendation is to ensure that there is sufficient lead-time for learners and academics to develop the skills required to actively and thoroughly participate in a virtual world. This suggestion accords with existing research (Bradley et al., 2017; Ryan & Deci, 2000), which argues that heightened computer self-efficacy enhances intrinsic motivation; a key indicator in the development of self-determination.

This research demonstrated that although practising nurses clearly lack the understanding of the varied curriculum and delivery methods in higher education nursing courses, they are nevertheless extremely motivated to work with students. Therefore, the inclusion of practising nurses is recommended in the delivery of nursing education——not just in the clinical arena, but also in experiences within virtual and on-campus offerings.

The disconnect between the expectations from the higher education sector and health services in terms of graduate capacity has been identified as a contributing factor to the marginalisation of students during their clinical placement. Addressing this is highly recommended if we are to maximise the quality of this essential learning environment. Whether academia bends to the demands of practicing nurses (who are themselves functioning under the hegemony of Medicine and the healthcare system) to produce 'doing' nurses, or whether practising nurses can be drawn into an academic, researched-based vision of a future 'thinking' nurse, will be an exciting debate.

7.7.3 Future research.

The findings of this research inform an understanding of the nature of learning nursing skills with students who have the opportunity to learn in a virtual world. There are a number of key aspects within the findings that suggest further areas of research. These areas are specific to both the nature of learning via interactions in SL and the clinical experience of the students.

With a focus on curriculum development, it would timely to investigate the effectiveness of an embedded and scaffolded approach to learning nursing skills within SL. Scaffolding in this instance means in consideration of both the learner's knowledge and ability, and also of both on-campus and clinical experiences. The learning outcomes would be objectively measured—in terms of both clinical competence and the application of clinical reasoning. In addition, subjective observations of the internalisation of an appropriate professional demeanour would also be an interesting addition.

Further research could explore the learning outcomes of nursing students relative to the self-creation of their avatars. This would extend the existing education literature where the actualisation of an avatar is associated with intrinsic motivation and the development of self-

determination. Extension of this specific area of research would be to explore if a student's style of learning alters when they are operating as an ideal-self as opposed to a real-world representation of self.

Despite finding that academics generally supported the use of SL in the curriculum, some were cautious regarding its initial adoption. This mirrors contemporary literature, which demonstrated that academics generally remain resistant to the adoption of educational technology. However, given the wide social adoption of technology and a changing learner profile, research must identify both the obstacles to, and support systems for, the uptake of SL into a nursing curriculum. Interventions such as the use of guided support and professional development should be considered as a starting point.

With a focus on the ecology of learning, the connections enabled when interacting in SL could be explored more thoroughly. The cooperative and productive connections that were evidenced in this research between students using SL contradict the generally held and often professed adage that contemporary higher education, because of the increasing use of online learning platforms, is an isolating experience for students. If, indeed, there is a profound lack of camaraderie between contemporary nursing students as compared to the tight-knit groups, which were formed under the hospital training model, then not only should online learning be increased, but SL could be used to forge strong social connections. This could then bolster students during the stresses of clinical placement.

Having a wider, learning network enabled through inworld participation has been shown to be extremely beneficial in this research. The transferability of this phenomenon to other student groups and the degree to which these connections can engender a positive, constructive learning culture, should be understood more thoroughly. Therefore, it is recommended that future research could explore the learning connections made in SL within other disciplines and also could extend to include learning networks from industry partners.

It is certain that the education of nurses will continue at higher education institutions as the format of choice for the foreseeable future. Further research is warranted to ascertain the effectiveness of curriculum where the use of an educational technology, such as SL is a substantial component of the program. The dubious standard of the skill levels of nursing graduates has been well established in the research literature (Freeling & Parker, 2015). For this reason, a longitudinal study that maps the use of SL in an undergraduate program and captures the proficiency and competence of these graduates is suggested.

This research furthers the current understanding of the cultural norms of the clinical environment, some of which can have a negative impact on the education of nursing students. Ultimately, disillusioned practising nurses are challenged to remain positive when working with students whom they perceive to be lagging in their acquisition of the necessary knowledge and skill set. A recommendation for further research is to determine if practising nurses, who have been included in the processes of curriculum development and delivery, have increased empathy or willingness when working with nursing students. In recognition that the problem is unlikely to lie solely with the students, perhaps a study where practising nurses work as virtual mentors—inworld with the students—would be beneficial in building respect and reconciling the two groups.

Researcher reflection. The need for change is clear to me.

I have a keen and privileged insight into the experiences of participants in this research. My personal nursing history, initially as an EN undergraduate in a BN program, then as an RN, and a clinical facilitator, led to my current role as nurse academic. I have drawn upon my own personal experiences many times as a guide for what might be engaging or accessible for my students. A technologically-driven education however, is an entirely new milieu, and I find I have no personal history to draw from. I suspect anecdotally this is the case for many of my colleagues where we all feel a little like the pedagogical rug has been pulled out from under us.

I remember one of my courses during the second year of my BN was to learn how to use a computer. It was very rudimentary. I think we commenced with how to turn it on! Learning to confidently wield the virtual world of SL took me back to that simple lesson and the realisation that the gap between my students and myself is significant. It is clear that we speak different languages.

My experience as an undergraduate nursing student with a somewhat closeted EN qualification behind me adds a layer to this introspection. I was already proficient in many of the 'doing' skills of nursing, and so higher education was not challenging. I worked out how to play the system to my favour—to keep my qualifications quiet on-campus (where my lecturers were impressed with my skills) and during clinical I would proudly let the RNs know of my vocational history, so as to align with them. My student life was great and I think I would have rejected the notion that I needed additional rehearsal to be an RN using a virtual world as part of my undergraduate program.

During this research, however, I have realised that SL would have been a wonderful adjunct to my education. Being an EN gave me a sense of invincibility during my BN

studies—I thought I knew it all. What I didn't know was how to make decisions as an RN; how to delegate, or how to communicate with others in the healthcare team. I was lacking all of the higher-order, much needed, attributes of a professional RN—the same new graduate deficiencies which are still decried today.

It became obvious that these skills were lacking as soon as I commenced working as an RN. I had difficulties with time management. I lacked the confidence to ask for help from ENs or to seek clarification from medical staff. This was the work of the RN and I had not been shown how to do this, not rehearsed it, and not been supported to learn it. All of a sudden, I was back with the herd—the graduates of higher education who were not practice-ready.

7.8 Conclusion

The nature of learning in Second Life (SL) was the focus of this research and the context was nursing education. Consistent with the conceptual framework of an ecology of learning, a multidimensional methodology was conducted, where the researcher explored the experiences and the meaning assigned to these by students and educators. With a focus on contemporary nursing, the researcher also gathered knowledge about contextual perspective and potential transferability from practicing professionals.

Clearly, this research has been able to establish that the nature of learning in SL is multifaceted and is a viable, accessible, economical and a dynamic alternate realm between the classroom and the bedside where students can be projected versions of their ideal nursing selves. Through their avatar, they were able to achieve a rehearsing of higher-order nursing, communication and interpersonal skills. This can be described as a bravado and dis-inhibition that relative anonymity can foster. The research was able to show that they felt safe and supported and as their habitual fear of the clinical environment dissipated inworld. They, as their avatar, began to practice nursing with a competence that they have been seeking and this was able to keep them actively engaged in their learning.

What if students could take all of the learning, the confidence, competence and camaraderie that SL engenders, with them onto clinical placements? What if when they are confronted with a high-stakes, critical incident in clinical practice they could draw upon a virtual hospital ward experience that was so real it was as if they were really there? This becoming an experience in which they were the best projection of their ideal nursing self—composed, knowledgeable and responsive.

This research has taken place at a time where technology is disrupting nursing education practice and where clinically, nurses are challenged to deliver care to patients with higher

acuity, all in the context of a chronic shortfall of experienced staff and poor retention of graduating nurses. Responding to knee jerk reactions to calls for practice ready graduates is not cognisant of the wider sociological machinations that serve to keep nurses as a pair of hands and not an equal healthcare member. The future of nursing has the capacity to be through knowledge and research about the healthcare system and the goals of the profession.

Nursing education is at a crossroads. As technology encroaches upon seemingly all facets of society, and demands change, the practice of educating nurses needs to keep pace. The recommendations of this research may serve to lessen the discord between nursing students and graduates and the demands of the health workforce. The integration of SL across a nursing curriculum could provide an opportunity to challenge existing and longstanding pedagogical approaches that have served to endorse stayed nursing education traditions in an exhausted health workforce. Now is the time to continue to pave the way for our future nurses, cognisant of meeting the ever-changing societal demands, shaped by those who have gone, ready and able, to envision a contemporary profession.

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Appendices

Appendix A: Human Research Ethics Committee approval

HUMAN RESEARCH ETHICS COMMITTEE (HREC)
HUMAN RESEARCH ETHICS SUB-COMMITTEE (HRESC)

NOTIFICATION

To:	Pauletta Irwin/Prof Iain Graham School of Health and Human Sciences pauletta.irwin@scu.edu.au;iain.graham@scu.edu.au
From:	Secretary, Human Research Ethics Committee Division of Research, R. Block
Date:	5 August 2013
Project name:	*Examining the use of a virtual world as a teaching platform for undergraduate health students.*
	Approval Number ECN-13-201

The Southern Cross University Human Research Ethics Committee has established, in accordance with the National Statement on Ethical Conduct in Human Research—Section 5/Processes of Research Governance and Ethical Review, a procedure for expedited review and ratification by a delegated authority of the HREC.

Thank you for your expedited ethics application dated the 15 June. This has been considered by the Coffs Harbour HRESC. This research is approved.

All ethics approvals are subject to standard conditions of approval. These should be noted by researchers as there is compliance and monitoring advice included in these conditions.

Ms Sue Kelly
HREC Administration
T: (02) 6626 9139
E: ethics.lismore@scu.edu.au

Professor Bill Boyd
Chair, HREC
E. william.boyd@scu.edu.au

HUMAN RESEARCH ETHICS COMMITTEE (HREC)
HUMAN RESEARCH ETHICS SUB-COMMITTEE (HRESC)

STANDARD CONDITIONS OF APPROVAL FOR ALL ETHICALLY APPROVED RESEARCH PROJECTS

The following standard conditions of approval are mandatory for all research projects which have been approved by the HREC or a HRESC and have received an ethics approval number.

All reporting is to be submitted through the Human Research Ethics Office, either at Lismore, Coffs Harbour or GC/Tweed. The email addresses are:
ethics.lismore@scu.edu.au
ethics.tweed@scu.edu.au

Forms for annual reports, renewals, completions and changes of protocol are available at the website:
http://www.scu.edu.au/research/index.php/dds/?cat_id=1225#cat1225

Standard Conditions in accordance with the National Statement on Ethical Conduct in Human Research (National Statement) (*NS*).

1. Monitoring

NS 5.5.1–5.5.10

Responsibility for ensuring that research is reliably monitored lies with the institution under which the research is conducted. Mechanisms for monitoring can include:
(a) reports from researchers;
(b) reports from independent agencies (such as a data and safety monitoring board);
(c) review of adverse event reports;
(d) random inspections of research sites, data, or consent documentation; and
(e) interviews with research participants or other forms of feedback from them.

2. Approvals

(a) All ethics approvals are valid for **12 months** unless specified otherwise. If research is continuing after 12 months, then the ethics approval MUST be renewed. Complete the Annual Report/Renewal form and send to the ethics office.

(b) *NS 5.5.5*
The researcher/s will **provide a report every 12 months** on the progress to date or outcome in the case of completed research including detail about:
Maintenance and security of the records.
Compliance with the approved proposal.
Compliance with any conditions of approval.
Changes of protocol to the research.

3. Reporting to the HREC

(c) The researchers will immediately notify the ethics office, on the appropriate form, **any change in protocol.** *NS 5.5.3*

(d) A **completion report**, on the appropriate form, must be forwarded to the ethics office.

(e) The researchers will immediately notify the ethics office about any circumstance that might affect ethical acceptance of the research protocol. *NS 5.5.3*

(f) The researchers will immediately notify the ethics office about **any** adverse events/incidences which have occurred to participants in their research. *NS 5.5.3*

2. Research conducted overseas

NS 4.8.1–4.8.21
Researchers conducting a study in a country other than Australia, need to be aware of any protocols for that country and ensure that they are followed ethically and with appropriate cultural sensitivity.

3. Participant Complaints

NS 5.6.1–5.6.7

General information

Institutions may receive complaints about researchers or the conduct of research, or about the conduct of a Human Research Ethics Committee (HREC) or other review body.

Complaints may be made by participants, researchers, staff of institutions, or others. All complaints should be handled promptly and sensitively. All participants in research conducted by Southern Cross University should be advised of the above procedure and be given a copy of the contact details for the Complaints Officer. They should also be aware of the ethics approval number issued by the Human Research Ethics Committee.

The following paragraph is to be included in any plain language statements for participants in research.

Complaints about the ethical conduct of this research should be addressed in writing to the following:
Ethics Complaints Officer
HREC
Southern Cross University
PO Box 157
Lismore, NSW, 2480
Email: ethics.lismore@scu.edu.au
All complaints are investigated fully and according to due process under the National Statement on Ethical Conduct in Human Research and this University. Any complaint you make will be treated in confidence and you will be informed of the outcome.

Appendix B: Recruitment email for undergraduate nursing students

Project Title: The exploration of learning in Second Life: a focused ethnographic study in undergraduate nursing

Researcher: Pauletta Irwin (PhD candidate)
Supervisors: Professor Iain Graham, Dr Rosanne Coutts

Dear students,

Participant in learning in a virtual world research project

This letter is to invite you participate in an interview with me to explore your experiences with using Second Life (SL) as a teaching and learning platform in the course NURS xxxx. I am employing a number of strategies in order to extend my understanding of Second Life's usability in teaching and learning in our programs. With your input, I hope to extend this understanding.

I will be conducting interviews and taking field notes from observations made during everyday interactions both on-campus and inworld. I will also be taking photographs (screen shots) of participants when they are inworld.

To begin this process, I would appreciate it if you could return this email and indicate if you would like to participate in an interview (via real-life/second life/phone or skype). I will then organise a time with you that suits ☺

I have attached a Participant Information Statement to this email that provides further information regarding this research. The attached Consent form also has important information and is required to be completed should you decide to participate in the research.

Should there be any questions in relation to this correspondence or in relation to the research, please feel free to contact the researchers on the numbers below.

In anticipation of your participation, thank you for your assistance and we look forward to sharing the outcomes of the research in the near future.
Kind regards

Pauletta

Pauletta Irwin

(02) 66269610
pauletta.irwin@scu.edu.au

Iain Graham

(02) 66203557
iain.graham@scu.edu.au

Rosanne Coutts
(02) 66203235
Rosanne.coutts@scu.edu.au

Appendix C: Recruitment email for higher education academics

Project Title: The exploration of learning in Second Life: a focused ethnographic study in undergraduate nursing

Researcher: Pauletta Irwin (PhD candidate)
Supervisors: Professor Iain Graham, Dr Rosanne Coutts

Dear colleagues,

Participant in learning in a virtual world research project

This letter is to invite you participate in an interview with me to explore your experiences with using Second Life (SL) as a teaching and learning platform in the course NURS xxxx. I am employing a number of strategies in order to extend my understanding of Second Life's usability in teaching and learning in our programs. With your input, I hope to extend this understanding.

I will be conducting interviews and taking field notes from observations made during everyday interactions both on-campus and inworld. I will also be taking photographs (screen shots) of participants when they are inworld.

To begin this process, I would appreciate it if you could return this email and indicate if you would like to participate an interview (via real-life/second life/phone or skype). I will then organise a time with you that suits ☺

I have attached a Participant Information Statement to this email that provides further information regarding this research. The attached Consent form also has important information and is required to be completed should you decide to participate in the research.

Should there be any questions in relation to this correspondence or in relation to the research, please feel free to contact the researchers on the numbers below.

In anticipation of your participation, thank you for your assistance and we look forward to sharing the outcomes of the research in the near future.

Kind regards

Pauletta

Pauletta Irwin

(02) 66269610
pauletta.irwin@scu.edu.au

Iain Graham

(02) 66203557
iain.graham@scu.edu.au

Rosanne Coutts
(02) 66203235
Rosanne.coutts@scu.edu.au

Appendix D: Recruitment email for clinically practicing Registered Nurses

Project Title: The exploration of learning in Second Life: a focused ethnographic study in undergraduate nursing

Researcher: Pauletta Irwin (PhD candidate)
Supervisors: Professor Iain Graham, Dr Rosanne Coutts

Dear *Name* (RN),

Participant in learning in a virtual world research project

This letter is to invite you participate in an interview with me to explore your perceptions of using Second Life (SL) as a teaching and learning platform in the Bachelor of Nursing program. Your willingness to discuss experiences of nursing in relation to this altered teaching strategy would be appreciated.

I am employing a number of strategies in order to extend my understanding of Second Life's usability in teaching and learning in our programs. With your input, I hope to extend this understanding.

I will be conducting interviews with clinically practicing Registered Nurses within the local health district.

To begin this process, I would appreciate it if you could return this email and indicate if you would like to participate an interview (via face to face, phone or skype). I will then organise a time with you that suits ☺

I have attached a Participant Information Statement to this email that provides further information regarding this research. The attached Consent form also has important information and is required to be completed should you decide to participate in the research.

Should there be any questions in relation to this correspondence or in relation to the research, please feel free to contact the researchers on the numbers below.

In anticipation of your participation, thank you for your assistance and we look forward to sharing the outcomes of the research in the near future.

Kind regards

Pauletta

Pauletta Irwin

(02) 66269610
pauletta.irwin@scu.edu.au

Iain Graham

(02) 66203557
iain.graham@scu.edu.au

Rosanne Coutts
(02) 66203235
Rosanne.coutts@scu.edu.au

Appendix E: Participant Information Statement for undergraduate nursing students

Date: xx/xx/20xx

Participant Information Sheet

Project Title: The exploration of learning in Second Life: a focused ethnographic study in undergraduate nursing

Researcher: Pauletta Irwin (PhD Candidate)
Supervisors: Professor Iain Graham & Dr Rosanne Coutts

Introduction My name is Pauletta Irwin and I am conducting research as part of my PhD with SCU. Some of you may have watched training videos that I created and our avatars may have met inworld recently.

Project aims:
This research will investigate second year Bachelor of Nursing (BN) students', SCU nursing academics', and clinically practicing Registered Nurses' (RNs) perceptions of the virtual world of Second Life (SL) as a platform to complete a simulation assessment for varied courses in the program.

I am interested in what you think about the use of SL as an alternate method of teaching and learning using virtual simulation. I am also keen to know if you think this technology could be introduced in other parts of the curriculum.

What participation will involve:
To conduct this research I am contacting all 2nd year BN students enrolled in a course that utilises SL.

You are invited to **participate in an interview** where you will be asked to answer questions about your engagement with SL. This will take between 5 - 60 minutes. Should you agree to this your contributions will be de-identified.

Additionally, the researcher will take field notes of naturally occurring interactions between staff and students (both on-campus and inworld). Also, the researcher may take photographs (screen shots) of inworld interactions. In addition to written consent, the researcher will ask for your verbal permission prior to taking a photograph.

Participant's rights and interests:
The benefits for a BN student participating in this research are improved learning resources; through their evaluation and reflections, improvements can be made for future learning units in their study utilising this technology.

We anticipate that focus group or interview participation, having your avatar photographed or any subsequent publications, won't cause any distress or other side-effects; however, if you feel distressed or change your mind after you've started, you can withdraw from the study at any stage. It will not be possible to withdraw once the transcripts of the focus groups or interviews have been coded.

Confidentiality
You are not obligated to participate in this study. If you choose to participate your contributions will be de-identified.

All data will be kept in a locked location within the School of H&HS and all electronic data will be password protected. Only the researcher and the supervisory research team will have access to the data. In line with the University procedures, the data will be held for seven (7) years, and after that destroyed.

Dissemination of research results:
Information collected will be presented as overall data. Research findings may be submitted as group data for publication in peer-review journals or presented as conference presentations.

If you would like feedback on the overall outcomes of the study by way of email, you can nominate to provide your contact details at the conclusion of the online survey. The researcher will send you final research findings. In addition, a full account of the research will be made available at Southern Cross University Library at a later stage.

Concerns or complaints:

This study has been approved by the Southern Cross University Human Research and Ethics Committee. The approval number is:

If you have any concerns about the **ethical conduct** of the research, the following procedure should occur:

Write to the following:

The Ethics Complaints Officer
Southern Cross University
PO Box 157
Lismore NSW 2480
sue.kelly@scu.edu.au

All information is confidential and will be handled as soon as possible.

Further information:
Should you require any further information, please do not hesitate contacting me or my supervisor. Our contact details are below:

Researcher
Pauletta Irwin
PH: 02 66269610
Email: pauletta.irwin@newcastle.edu.au

Principle Supervisor
Iain Graham
PH: 02 - 6620 3557
Email: iain.graham@scu.edu.au

Appendix F: Consent form for undergraduate nursing students

CONSENT FORM

Project Title: The exploration of learning in Second Life: a focused ethnographic study in undergraduate nursing

Names of researchers: Pauletta Irwin, Professor Iain graham, Dr Rosanne Coutts

Tick the box that applies, then sign and date and give to the researcher

I agree to take part in the Southern Cross University research project specified above	Yes ☐ No ☐
I understand the information about my participation in the research project, which has been provided to me by the researchers.	Yes ☐ No ☐
I agree to participate in an interview to discuss my experience and perceptions of using Second Life	Yes ☐ No ☐
I agree to having photographs (screen shots) taken of my avatar when I am inworld	Yes ☐ No ☐
I understand that the researcher will inform me when a photograph (screen shot) will be taken inword and I can withdraw any prior consent and refuse to be photographed by telling the researcher.	Yes ☐ No ☐
I agree to the researcher making observations and recording these as field notes of my involvement in any naturally occurring interaction on-campus or inworld.	Yes ☐ No ☐
I understand that, prior to the information being de-identified, I can withdraw my consent to the documentation of observed interactions by requesting this of the researcher.	Yes ☐ No ☐
I understand that my participation is voluntary and I understand that I can cease my participation at any time.	Yes ☐ No ☐
I understand that my participation in this research will be treated with confidentiality.	Yes ☐ No ☐
I understand that any information that may identify me will be de-identified at the time of analysis of any data	Yes ☐ No ☐
I understand that no identifying information will be disclosed or published.	Yes ☐ No ☐
I understand that all information gathered in this research will be kept confidentially for 7 years at the University	Yes ☐ No ☐
I am aware that I can contact the researchers at any time with any queries. Their contact details are provided to me.	Yes ☐ No ☐
I understand that this research project has been approved by Southern Cross University Human Research Ethics Committees	Yes ☐ No ☐

Participant's name: _____

Participant's signature: _____

Date: _____

☐ Please tick this box and provide your email or mail address below if you wish to receive feedback about the research.

Email: _____

Thank you for your participation

Appendix G: Participant Information Statement for higher education academics

Date: xx/xx/20xx

Participant Information Sheet

Project Title: The exploration of learning in Second Life: a focused ethnographic study in undergraduate nursing

Researcher: Pauletta Irwin (PhD Candidate)
Supervisors: Professor Iain Graham & Dr Rosanne Coutts

Introduction My name is Pauletta Irwin and I am conducting research as part of my PhD with SCU.

Project aims:
This research will investigate second year Bachelor of Nursing (BN) students', SCU nursing academics', and clinically practicing Registered Nurses' (RNs) perceptions of the virtual world of Second Life (SL) as a platform to complete a simulation assessment for varied courses in the program.

I am interested in what you think about the use of SL as an alternate method of teaching and learning using virtual simulation. I am also keen to know if you think this technology could be introduced in other parts of the curriculum.

What participation will involve:
To conduct this research I am contacting all academic staff who have utilised SL as a teaching strategy in the BN program.
Of interest, I am also inviting all 2nd year BN students enrolled in a course that is utilising SL. In addition, some clinically practicing RNs are invited to share their perspectives on utilising SL in the BN program.

You are invited to **participate in an interview** where you will be asked to answer questions about your engagement with SL. This will take between 5 - 60 minutes. Should you agree to this your contributions will be de-identified.

Additionally, the researcher will take field notes of naturally occurring interactions between staff and students (both on-campus and inworld). Also, the researcher may take photographs (screen shots) of inworld interactions. In addition to written consent, the researcher will ask for your verbal permission prior to taking a photograph.

Participant's rights and interests:
The benefits for higher education academics participating in this research are to be influential in the adoption of possibly improved learning resources. Through their evaluation and reflections, improvements can be made for future learning courses in the BN utilising this technology.

We anticipate that focus group or interview participation, having your avatar photographed or any subsequent publications, won't cause any distress or other side-effects; however, if you feel distressed or change your mind after you've started, you can withdraw from the study at

any stage. It will not be possible to withdraw once the transcripts of the focus groups or interviews have been coded.

Confidentiality
You are not obligated to participate in this study. If you choose to participate your contributions will be de-identified.

All data will be kept in a locked location within the School of H&HS and all electronic data will be password protected. Only the researcher and the supervisory research team will have access to the data. In line with the University procedures, the data will be held for seven (7) years, and after that destroyed.

Dissemination of research results:
Information collected will be presented as overall data. Research findings may be submitted as group data for publication in peer-review journals or presented as conference presentations.

If you would like feedback on the overall outcomes of the study by way of email, you can nominate to provide your contact details at the conclusion of the online survey. The researcher will send you final research findings. In addition, a full account of the research will be made available at Southern Cross University Library at a later stage.

Concerns or complaints:

This study has been approved by the Southern Cross University Human Research and Ethics Committee. The approval number is:

If you have any concerns about the **ethical conduct** of the research, the following procedure should occur:

Write to the following:

The Ethics Complaints Officer
Southern Cross University
PO Box 157
Lismore NSW 2480
sue.kelly@scu.edu.au

All information is confidential and will be handled as soon as possible.

Further information:
Should you require any further information, please do not hesitate contacting me or my supervisor. Our contact details are below:

Researcher
Pauletta Irwin
PH: 02 66269610
Email: pauletta.irwin@newcastle.edu.au

Principle Supervisor
Iain Graham
PH: 02 - 6620 3557
Email: iain.graham@scu.edu.au

Appendix H: Consent form for higher education academics

CONSENT FORM

Project Title: The exploration of learning in Second Life: a focused ethnographic study in undergraduate nursing

Names of researchers: Pauletta Irwin, Professor Iain graham, Dr Rosanne Coutts

Tick the box that applies, then sign and date and give to the researcher

I agree to take part in the Southern Cross University research project specified above	Yes ☐ No ☐
I understand the information about my participation in the research project, which has been provided to me by the researchers.	Yes ☐ No ☐
I agree to participate in an interview to discuss my experience and perceptions of using Second Life	Yes ☐ No ☐
I agree to having photographs (screen shots) taken of my avatar when I am inworld	Yes ☐ No ☐
I understand that the researcher will inform me when a photograph (screen shot) will be taken inword and I can withdraw any prior consent and refuse to be photographed by telling the researcher.	Yes ☐ No ☐
I agree to the researcher making observations and recording these as field notes of my involvement in any naturally occurring interaction on-campus or inworld.	Yes ☐ No ☐
I understand that, prior to the information being de-identified, I can withdraw my consent to the documentation of observed interactions by requesting this of the researcher.	Yes ☐ No ☐
I understand that my participation is voluntary and I understand that I can cease my participation at any time.	Yes ☐ No ☐
I understand that my participation in this research will be treated with confidentiality.	Yes ☐ No ☐
I understand that any information that may identify me will be de-identified at the time of analysis of any data	Yes ☐ No ☐
I understand that no identifying information will be disclosed or published.	Yes ☐ No ☐
I understand that all information gathered in this research will be kept confidentially for 7 years at the University	Yes ☐ No ☐
I am aware that I can contact the researchers at any time with any queries. Their contact details are provided to me.	Yes ☐ No ☐
I understand that this research project has been approved by Southern Cross University Human Research Ethics Committees	Yes ☐ No ☐

Participant's name: _____

Participant's signature: _____

Date: _____

☐ Please tick this box and provide your email or mail address below if you wish to receive feedback about the research.

Email: _____

Thank you for your participation

Appendix I: Participant Information Statement for clinically practicing Registered Nurses

Date: xx/xx/20xx

Participant Information Sheet

Project Title: The exploration of learning in Second Life: a focused ethnographic study in undergraduate nursing

Researcher: Pauletta Irwin (PhD Candidate)
Supervisors: Professor Iain Graham & Dr Rosanne Coutts

Introduction My name is Pauletta Irwin and I am conducting research as part of my PhD with SCU.

Project aims:

I am interested in what you think about the use of SL as an alternate method of teaching and learning using virtual simulation. I am also keen to know if you think this technology could be introduced in other parts of the curriculum.

What participation will involve:
To conduct this research I am inviting some clinically practicing RNs employed in the Mid North Coast Health District to share their perspectives on utilising SL in the BN program.

Of interest, all academic staff who have utilised SL as a teaching strategy in the BN program are invited to participate in the research also.
In addition, I am also inviting all 2nd year BN students enrolled in a course that is utilising SL.

You are invited to **participate in an interview** where you will be asked to answer questions about your engagement with SL. This will take between 5 - 60 minutes. Should you agree to this your contributions will be de-identified.

Participant's rights and interests:
Clinically practicing RNs will benefit from participating in this research by influencing the adoption of possibly improved learning resources. Through their evaluation and reflections, improvements can be made for future learning courses in the BN utilising this technology.

We anticipate that focus group or interview participation or any subsequent publications, won't cause any distress or other side-effects; however, if you feel distressed or change your mind after you've started, you can withdraw from the study at any stage. It will not be possible to withdraw once the transcripts of the focus groups or interviews have been coded.

Confidentiality
You are not obligated to participate in this study. If you choose to participate your contributions will be de-identified.

All data will be kept in a locked location within the School of H&HS and all electronic data will be password protected. Only the researcher and the supervisory research team will have access to the data. In line with the University procedures, the data will be held for seven (7) years, and after that destroyed.

Dissemination of research results:
Information collected will be presented as overall data. Research findings may be submitted as group data for publication in peer-review journals or presented as conference presentations.

If you would like feedback on the overall outcomes of the study by way of email, you can nominate to provide your contact details at the conclusion of the online survey. The researcher will send you final research findings. In addition, a full account of the research will be made available at Southern Cross University Library at a later stage.

Concerns or complaints:

This study has been approved by the Southern Cross University Human Research and Ethics Committee. The approval number is:

If you have any concerns about the **ethical conduct** of the research, the following procedure should occur:

Write to the following:

The Ethics Complaints Officer
Southern Cross University
PO Box 157
Lismore NSW 2480
sue.kelly@scu.edu.au

All information is confidential and will be handled as soon as possible.

Further information:
Should you require any further information, please do not hesitate contacting me or my supervisor. Our contact details are below:

Researcher
Pauletta Irwin
PH: 02 66269610
Email: pauletta.irwin@newcastle.edu.au

Principle Supervisor
Iain Graham
PH: 02 - 6620 3557
Email: iain.graham@scu.edu.au

Appendix J: Consent form for clinically practicing Registered Nurses

CONSENT FORM

Project Title: The exploration of learning in Second Life: a focused ethnographic study in undergraduate nursing

Names of researchers: Pauletta Irwin, Professor Iain graham, Dr Rosanne Coutts

Tick the box that applies, then sign and date and give to the researcher

I agree to take part in the Southern Cross University research project specified above	Yes ☐ No ☐
I understand the information about my participation in the research project, which has been provided to me by the researchers.	Yes ☐ No ☐
I agree to participate in an interview to discuss my experience and perceptions of using Second Life	Yes ☐ No ☐
I understand that my participation is voluntary and I understand that I can cease my participation at any time.	Yes ☐ No ☐
I understand that my participation in this research will be treated with confidentiality.	Yes ☐ No ☐
I understand that any information that may identify me will be de-identified at the time of analysis of any data	Yes ☐ No ☐
I understand that no identifying information will be disclosed or published.	Yes ☐ No ☐
I understand that all information gathered in this research will be kept confidentially for 7 years at the University	Yes ☐ No ☐
I am aware that I can contact the researchers at any time with any queries. Their contact details are provided to me.	Yes ☐ No ☐
I understand that this research project has been approved by Southern Cross University Human Research Ethics Committees	Yes ☐ No ☐

Participant's name: _____

Participant's signature: _____

Date: _____

☐ Please tick this box and provide your email or mail address below if you wish to receive feedback about the research.

Email: _____

Thank you for your participation

Appendix K: Formative pain assessment rubric

Student name and ID	Date	Time	Assessor Initials	Competent—meets all criteria	Requires development to gain competency

Performance Criteria (Insert a ✓ in the appropriate column)	**NMBA (2006) Codes**	**Criteria**	**N/A**	**Not done**	**Done-Incorrectly**	**Done**
1. Acknowledges client's concerns or feelings respectfully and with dignity		9.1				
2. Gives a clear explanation of what they intend to do; gains consent		2.1, 2.3, 9.1, 9.2				
3. Assesses the client's pain using the following criteria as a guideline i. **S**ite ii. **O**nset iii. **C**haracteristics iv. **R**adiation v. **A**ssociations—related physical effects vi. **T**ime course vii. **E**xacerbations/relieving factors viii. **S**everity ix. **I**mpact of pain on functional status where relevant		5.1, 5.2	i				
			ii				
			iii				
			iv.				
			v.				
			vi.				
			vii.				
			viii.				
			ix.				

4.	Reviews adequacy of current pain medication use with client	5.1					
5.	From assessment data collected, makes a clinical diagnosis regarding the cause of the pain	5.3, 6.1					
6.	Discusses a concise and appropriate short term goal plan; includes referral where relevant	5.3, 6.1					
7.	Concludes the relationship respectfully	9.1					
8.	Language used is professional and pitched at level client will understand	9.1					

Comments

Nursing and Midwifery Board of Australia (NMBA). (2006). *National Competency Standards for the Registered Nurse - 4th Edition (new format).* Retrieved from http://www.nursingmidwiferyboard.gov.au/Codes-and-Guidelines.aspx

Appendix L: Home and safety assessment descriptors for students

Home and Safety Simulation assessment
Due: **1st SIM Scenario Week 6 Friday 27th March, 2015 by 1700**
2nd SIM Scenario Week 13 Friday 15th May, 2015 by 1700
Weighting: **SR/NSR**
Length: **7-10 minutes**
Format: Video-recorded or Second Life Simulation
(Recording guidelines provided in BB Assessment folder)
Submission: **Both recordings must only be submitted via Turnitin.**

Objective 2. Demonstrate principles and strategies to conduct an integrated and comprehensive assessment of two clients: one at home and the other in a medical centre.
Objective 4. Demonstrate problem solving, hazard and risk assessment and decision making skills that respond to clinical challenges in a community environment.
Objective 5. Demonstrate interpersonal skills, during the consultation and within in multidisciplinary team.

- Two scenarios are provided and it is your task to design and perform a response to each scenario that demonstrates skills that meet each objective. Marking criteria is provided (see Assessment folder)
- Both SIMS can be recorded within the Clinical Laboratories with appropriate booking arrangements with the Technical Staff. It is your responsibility to organise independent practice, study and recording of the scenarios.
- Both SIMs can be recorded in Second Life.

Guidelines

- The recorded SIM scenario must be between 7-10 minutes of playtime.
- The recorded video must be of good quality with clear audio and visual features.
- You may also borrow the university's video camera device via the Library or the Student Learning Centre.
- If you are using Second Life to present your SIM scenarios, there are multiple recording programs available (For example Camtasia)
- Students who read from scripts will be penalised. This is expected to look like a real-life scenario so effective communication skills are part of the assessment.
- Students need to obtain a grade of 'Satisfy Requirement' for both SIMs.
- Failure to gain competency in both assessments will result in the award of a FAIL in the course.
- Resubmissions and resits will not be offered in the course.
- Cover sheet to be submitted with each recording

Scenario 1

The first SIM scenario is centred on a home visitation. You may record the SIM in your own home.

You are the Community Nurse conducting a home visit with Joseph Smith.

- Joseph Smith is 82 years. He has moderate/severe COPD, PVD, hypertension and an infected leg ulcer.
- Referred by a GP who sees him infrequently. Joseph had attended GP clinic yesterday due to increasing pain left lower leg.
- Joseph is a lifelong bachelor. He lives alone with a yappy dog that jumps! Has no transport of his own and minimal public transport is available. He lives in a semi-rural location.
- Joseph has no family support (originally from UK). He currently receives no help for housework or gardening. The house has not been cleaned for years. It is an obstacle course to get to front door.
- He smokes 1 pack/day and has since aged 16.
- He dislikes doctors and has alienated many services in the past.
- He has one kindly neighbour who shops for him and provides occasional transport.
- Experiences shortness of breath on exertion (SOBOE).
    - *Your response must be in terms of the objectives and the competencies outlined in the marking criteria.*

Scenario 2

The second SIM scenario is centred on a community health visitation within a clinic setting.

You are the Practice Nurse within the GP practice.

- **GP visit**….47 yr. old female with new diagnosis of Type2 Diabetes Mellitus (DM)
- Rosalie Jones presents to the practice and her GP has just informed her of the diagnosis of type 2 DM. She now sees the RN for management.
- Rosalie is an Indigenous women who cares for 6 children (8yrs to 15yrs) from her blended family. Additionally she helps with the care of her 2 elderly parents (both with insulin dependent diabetes).
- In the past she has avoided follow up on her elevated Blood Glucose Level (BGL), and is reluctant to accept the diabetes diagnosis today. Husband is a busy mechanic.
- She is a smoker, Body Mass Index (BMI) of 35, is hypertensive, and has hyperlipidaemia. Although she is being treated for depression, she is non-compliant with her medications.
- Today her GP has ordered a routine fluvax for RN to give. She has this annually.
- She is tearful and angry.
    - *Your response must be in terms of the objectives and the competencies outlined in the marking criteria.*

Appendix M: Stimulant questions used in Enrolled Nurse conversion program Second Life assessment

Australia / USA Comparative Healthcare Attitudes

As of March 13, 2015

Group A: Employees
See http://www.cvs.com/minuteclinic

CVS, a chain of pharmacy stores, is opening walk-in primary care "Minute Clinics" in its stores, staffed primarily by Board certified nurse practitioners and physician assistants.

On a scale of 1 to 7, where 1 means "it's an extremely bad idea" and 7 means "it's an extremely good idea," what do you think of the idea to staff walk-in primary care clinics with such employees instead of physicians?

Stimulant questions:

Consider the extended effects of this use of health workers in a primary healthcare setting. Who would benefit from this extended scope of practice? What implications does this extended scope for practice have for medical practitioners? Does the Australian Healthcare system offer any comparable services?

Group B: Processes
See https://www.apple.com/watch/health-and-fitness/

Apple is selling Health & Fitness apps with its new iWatch. It proposes to keep people active by measuring the extent to which they keep moving throughout the day.

Stimulant questions:

Consider the extended implications of this invention. Is this another example of where consumers have too much information about their health without having a full understanding? Can you see this as being an adjunctive health assessment tool? What similar products exist in healthcare?

On a scale of 1 to 7, where 1 means "it's an extremely bad idea" and 7 means "it's an extremely good idea," what do you think of the idea to require medical professionals to embrace such technologies?

Group C: Processes
http://www3.gehealthcare.com/en/Products/Categories/Computed_Tomography/Revolution_CT

CT Scan machines are large and expensive pieces of equipment that integrate X-ray images from multiple angles to create three-dimensional views of internal areas of the human body.

Stimulant questions:
America and Australia are both large countries. Consider the wider implications of the cost of and geographical positioning of these and other technological healthcare resources. Who benefits from these services?

On a scale of 1 to 7, where 1 means "it's an extremely bad idea" and 7 means "it's an extremely good idea," what do you think of the idea to encourage medical professionals to use such technologies sparingly, while relying more heavily on smaller and less expensive technologies?

Group D: Consumers
http://www3.gehealthcare.com/en/Products/Categories/Computed_Tomography/Revolution_CT

Orthopaedic knee surgery is often considered a non-urgent tertiary service. Consumers are often placed on waiting lists for weeks, or even months, before undergoing surgery.

Stimulant questions:
Consider the wider implications for this public health policy (social costs/ increased sick leave etc.). Demonstrate your understanding of the prioritization of waiting lists in the acute health setting.

On a scale of 1 to 7, where 1 means "it's an extremely bad idea" and 7 means "it's an extremely good idea," what do you think of the idea to establish government regulatory standards for waiting list times?

Group E: Payors
http://kaiserhealthnews.org/news/071613-michelle-andrews-column-on-premiums-for-smokers/

The Affordable Care Act of the United States (a.k.a. Obama Care) permits health insurance companies to charge certain smokers 50% more than non-smokers for medical coverage policies.

Stimulant questions:
Consider the wider implications for this policy—for smokers and non-smokers. Do Australian private health insurers have similar policies? Are there examples of other life choices being rewarded or penalized in other private or public health policies?

On a scale of 1 to 7, where 1 means "it's an extremely bad idea" and 7 means "it's an extremely good idea," what do you think of the idea to share the costs of smoking conditions like lung cancer through insurance rate premiums?

Group F: Payors
https://www.healthcare.gov/coverage/dental-coverage/

The Affordable Care Act of the United States (a.k.a. Obama Care) considers dental coverage for children to be an essential health benefit, but does not consider such coverage for adults to be an essential health benefit.

Stimulant questions:

Consider the wider implications of this public health policy. Is Australian public health policy comparable? Consider associated costs with adult dental care in America and Australia. Who benefits from this policy?

On a scale of 1 to 7, where 1 means "it's an extremely bad idea" and 7 means "it's an extremely good idea," what do you think of the idea to exclude dental coverage from the list of essential health benefits of adults?

Time Line: All Groups

Beginning of Week 1
Each individual answers the "good idea / bad idea" question as an individual.

End of Week 1, Beginning of Week 2
Each individual answers the "good idea / bad idea" question as an individual.
Each pair answers the "good idea / bad idea" question as a pair.

End of Week 2, Beginning of Week 3
Each individual answers the "good idea / bad idea" question as an individual.
Each pair answers the "good idea / bad idea" question as a pair.
Each group (of two pairs) answers the "good idea / bad idea" question as a group.

End of Week 3, Beginning of Week 4
Each individual answers the "good idea / bad idea" question as an individual.

Each pair answers the "good idea / bad idea" question as a pair.
Each group (of two pairs) answers the "good idea / bad idea" question as a group.
All students attempt to achieve a consensus on the "good idea / bad idea" question.

End of Week 4

Appendix N: Semi-structured interview templates

Semi-structured interview template for students:
Opening phase:

- Establish Rapport. My name is Pauletta Irwin and I am so delighted that you have agreed to participate in the research. As you may know, I am a member of the academic team here at XXX and I am conducting research to meet the requirements of my PhD.
- Purpose: If it's OK with you, I would like to ask you some questions about your experiences using SL and I want to learn about you and your experiences with education and technology use in general.
- Motivation: I hope to gain a better understanding of your experiences using SL—essentially like the name suggests, I am wanting to understand the nature of learning using SL.
- Time Line: The interview should take anywhere from 15mins to an hour. Is this OK with you?

Body: General

- Can you tell me about your experience of learning so far here at XXX?
- Do you see a connection with using technology and learning? Can you explain this?
- Do you see a connection with using technology and nursing? Can you explain this?

Transition: research focus

- Can you tell me your experiences of learning using SL?
- Do you feel your previous use of technology has influenced your experience using SL? Please explain.
- Can you share with me your thoughts coming into this course and having to participate in SL as part of a formative and/or summative assessment?
- Do you feel the use of SL is helping you to develop the skills required for a career in nursing? Please explain.

Closing

- Well it has been a pleasure to discuss this with you. I have made some points about are discussion. Is it ok if I read them over to you, to ensure that I have captured your thoughts?
- I will type up a transcript of this interview and send it though to you. Could you have a read over it to ensure, once again that this is a true reflection of our conversation.
- Certainly if you have any other thoughts or additions you would like to add, please let me know and we can make a time to catch up again.
- Thanks so much for your time today.

Semi-structured interview template for higher education academics:

Opening phase:

- Establish Rapport. My name is Pauletta Irwin and I am so delighted that you have agreed to participate in the research. As you may know, I am a member of the academic team here at XXX and I am conducting research to meet the requirements of my PhD.
- Purpose: If it's OK with you, I would like to ask you some questions about your experiences using SL and I want to learn about you and your experiences with education and technology use in general.
- Motivation: I hope to gain a better understanding of your experiences using SL—essentially like the name suggests, I am wanting to understand the nature of learning using SL.
- Time Line: The interview should take anywhere from 15mins to an hour. Is this OK with you?

Body: General

- Can you tell me about your experience of teaching so far here at XXX?
- Do you feel that it's important to incorporate the use of technology into the undergraduate nursing degree? (If so) can you explain this further?

Transition: research focus

- Can you tell me your experiences of teaching using SL?
- Can you share with me your thoughts, working in this course and having to teach using SL?
- How do you feel your previous use of technology has influenced your experience using SL?
- Do you feel the use of SL is helping your students to develop the skills required for a career in nursing? Please explain.

Closing

- Well it has been a pleasure to discuss this with you. I have made some points about are discussion. Is it ok if I read them over to you, to ensure that I have captured your thoughts?
- I will type up a transcript of this interview and send it though to you. Could you have a read over it to ensure, once again that this is a true reflection of our conversation.
- Certainly if you have any other thoughts or additions you would like to add, please let me know and we can make a time to catch up again.
- Thanks so much for your time today.

Semi-structured interview template for clinically practicing RNs:

Opening phase:

- Establish Rapport. My name is Pauletta Irwin and I am so delighted that you have agreed to participate in the research. As you may know, I am a member of the academic team at XXX and I am conducting research to meet the requirements of my PhD.
- Purpose: If it is OK with you, I would like to ask you some questions about your perceptions of undergraduate nursing students interacting in SL to learn the practice of nursing. I also want to learn about you and your experiences of working with graduates and with education and technology use in general.
- Motivation: I hope to gain a better understanding of your perceptions of and or your experiences using SL—essentially like the name suggests, I am wanting to understand the nature of learning using SL.
- Time Line: The interview should take anywhere from 15mins to an hour. Is this OK with you?

Body: General

- Can you tell me about your personal education experiences related to nursing?
- Do you feel that it is important to incorporate the use of technology into contemporary education—specifically an undergraduate nursing degree? (If so) can you explain this further?

Transition: research focus

- Can you tell me your experiences of working with graduate nurses?
- You have seen SL and how we use it with the undergraduate nursing students, I would love to know your thoughts about its use.
- Do you sense the use of SL could assist in the education of undergraduate nurses?

Closing

- Well it has been a pleasure to discuss this with you. I have made some points about are discussion. Is it ok if I read them over to you, to ensure that I have captured your thoughts?
- I will type up a transcript of this interview and send it though to you. Could you have a read over it to ensure, once again that this is a true reflection of our conversation.
- Certainly if you have any other thoughts or additions you would like to add, please let me know and we can make a time to catch up again.
- Thanks so much for your time today.

Appendix O: Excerpt of the academic workload framework 2015

School of Health and Human Science

Academic Workload Framework 2015

Preamble

The Academic Workload Framework (following emendations as a result of School wide consultation process) will be used by the School from next year (2015) in order to calculate and apportion academic workload. It will replace the current workload model.

1. Principles

The allocation of workload for full-time and part-time academic staff in the School will be related to scholarly activity which includes Teaching, Research and Service activities. The principles guiding the allocation of workload are:

- **Aligned**: the allocation of work tasks is aligned with the SCU Strategic Plan and Enterprise Agreement in place at the time, the School's operational needs, and the staff member's skills, expertise and career aspirations.
- **Consistent**: the allocation of workload is consistent across/between individuals and across the School with similar circumstances.
- **Transparent**: each/all staff members have access to basic information about the workloads of other staff members within the School (suitably de-identified). The presumption behind this is to promote equity and consistency and to limit privileging and discrimination for staff with similar performance and appointment levels.
- **Flexible**: the allocation of workload permits flexibility to accommodate for special or unforeseen circumstances that arise for either the University or the individual.
- **Fair and Equitable**: the allocation of 'time for tasks' is reasonable and fair given the nature of the task, and the skill and level of employment of the staff member.
- **Planned**: the School and the staff member have the opportunity to plan for workload allocation including the taking of annual leave through the timely completion of the PMDR process, such that the workload is allocated a reasonable time in advance of the required work.
- **Empowering**: the allocation of work tasks and time for those tasks is empowering for the staff member, aligned with their career aspirations and respectful of the needs of individuals and work units.
- **Monitored**: the allocation of workload is monitored through the PMDR process.
- **Supportive of Professional Development**: workload allocation will support the need for academic staff to engage in professional development activities and accreditation

The model is to be considered in the context of the Southern Cross University Academic Workload Framework October 2013 Final.pdf located at http://scu.edu.au/admin/hr/index.php/43/.

It will be the responsibility of each member of staff to assess their profile and performance for the past three years, to determine their goals for the next three years, and to negotiate with their supervisor in a collegial and constructive manner to set targets for the next three years.

It will be the responsibility of the supervisor to identify the School's needs, to review each staff member's performance, to discuss the staff member's goals, to negotiate with the staff member in a collegial and constructive manner, to assess the potential of the staff member to reach his or her goals, and to negotiate achievable targets.

At a minimum, an annual review of the workload allocation for each academic staff member will be undertaken and any adjustment between the fractions negotiated. For example where a staff member has taken on a role that would increase the service fraction then a concomitant reduction in the other fractions would be negotiated. If a staff member was unable meet the previously negotiated fractions then a revised fraction would be set.

Target Work Hours

The starting point for this calculation is based 1725 work hours per annum (46 wks/yr, based on 5 days/wk, 7.5 hrs/day). It is assumed that 4 weeks leave is taken each year and there is the equivalent of 2 weeks (10 days) of other public holidays, etc. Calculation will not be based on the actual annual leave taken each year (i.e. if staff take less than 4 weeks annual leave in a year, the number of hours used in these calculations will not be increased or the converse if they take more than 4 weeks).

Special Studies Leave—Long Service Leave, Parental Leave etc

Staff who have a period of Special Studies Leave (as awarded by the University), take Parental Leave, take Leave without pay or take Long Service Leave will have their total work fraction reduced pro rata.

Fraction Distribution

<u>Teaching Scholar:</u>

The starting point for negotiation of workload allocation with individual employees classified as Teaching Scholar will be 70% Teaching, 20% Scholarship of Teaching, and 10% Service.

<u>Teaching and Research Scholar:</u>

The starting point for negotiation of workload allocation with individual employees classified as Teaching and Research Scholar will be 60% Teaching, 30% Scholarship of Discovery, Application and Integration, and 10% Service

<u>Research Scholar:</u>

The starting point for negotiation of workload allocation with individual employees classified as Research Scholar will be, 90% Scholarship of Discovery, Application and Integration, and 10% Service

2. Scholarship of Teaching Fraction

Teaching is a scholarly activity that engages students in learning. It is informed and revitalised by scholarship, research, consultancy and/or professional practice. It encompasses a wide range of approaches including face-to-face teaching with large and small groups, technology-mediated teaching, one-to-one consultations, postgraduate supervision, supervising students' experience in work-based settings, advising students, assessing students' work, providing feedback on students' progress, preparing teaching and course materials, and contributing to curriculum design and development.

Core learning experiences for all units will incorporate content, interaction/experience, support and assessment.

Unit of Study Delivery

All typical units delivered by the School (lecture/ tutorial/ laboratory/ seminar format) must have no more than 4 hours delivery per week or 48 hours over a 12 week teaching session (or

equivalent) unless approved by the Deputy Head of School. Approval must be given annually. This delivery approach excludes Professional Experience.

Against this background, the following allocations are to be used as a guide for the allocation of workload associated with the delivery of a teaching and teaching related activities either through face-to-face, online mediums, by recording the lecture, or through any other means.

Title	**Weighting**	**Notes**
Unit Assessor	21 to 50 students–42 hours 51 to 200 students–60 hours per 12 credit point unit Over 200 students–80 hours per 12 credit point unit	Undergraduate units with less than 20 students will run only at the discretion of the DHOS (NB does not apply to Honours or Independent study units) Post graduate Units with less than 15 students will run only at the discretion of the DHOS Students = Enrolments at census. Duties include: collation of grades, Committee of Assessors, information to relevant support such as technical, PEU etc., minimal changes to unit information guide, rolling over study guide content from Blackboard site with minimal update of content, writing welcome message, checking readings are available on MyReadings, discussion with CC re staffing needs
Consultation	30 minutes/student/12 credit point unit	To be distributed across teaching team as negotiated by the team
Additional support for 1st year students	additional 15 minutes/student/12 credit point unit	To be distributed across teaching team as negotiated by the team
Content Delivery e.g. Lecture	1 hour delivery + 2 hours associated work time (AWT)	Delivered face-to-face, video link, or podcast (Does not apply to preparation of supplementary material)
Repeat Content Delivery	1 hour delivery + 1 hour AWT	Delivered face-to-face or video link
Remote site Lecture Delivery support	1 hour delivery (No AWT)	To support at remote sites the delivery of video conferenced teaching session. Role to facilitates discussion with students at remote site, ensure that students are able to interact/question as appropriate, deals with technology glitches (where possible)
Small Group Work, e.g. tutorial	1 hour delivery + 2 hours AWT	Standard tutorial size = 30, online = 20 Educational delivery work being undertaken is not defined by the space it is conducted in but rather by the educational experience. For example; tutorials on biomechanical material scheduled to run in the biomechanics laboratory are not automatically classed as laboratories because they are conducted in a laboratory
Repeat Small Group Work or equivalent	1 hour delivery + 1 hour AWT	As above

Title	**Weighting**	**Notes**
Laboratory session/ workshop/practical class or equivalent	1 hour delivery + 1 hour AWT	Staff student ratio to be negotiated with DHOS based on safety/room size requirements
Professional Experience supervision	1 hour delivery + 1 hour AWT	Professional experience supervisors/ teachers (e.g. supervisors in student led clinic ie direct teaching activity) NB Does not include student placement supervision within staff's private practice.
Marking	60 minutes/student/12 credit point unit	To be distributed across teaching team as negotiated by the team
Moderation of multiple markers	10 hours per unit offering where multiple markers are utilised	Normally to be undertaken by UA or to be distributed across teaching team as negotiated by the team
Benchmarking	10 hours per unit offering	Normally to be undertaken by UA. Results of Benchmarking to be included in Unit Report annually.
1st time teaching a unit (Applies to academic staff at Level A, B, and C only)	Additional 3 hours per teaching week or equivalent	Only applies to staff teaching new units for the first time and does not include units that have had any form of revision or redevelopment
Major revision/update /redevelopment of a 12 credit point unit	Up to 100 hours (to be negotiated with DHOS depending on the extent of revision/ redevelopment required)	Include major changes to structure, assessment, content or mode of delivery. Includes major re-writing of a Study Guide and associated learning resource development
Development of a new 12 credit point unit	150 hours	Tasks include the blue print of the unit, UIG, blackboard site, identifying resources required, developing assessment
Teaching innovation allocation (to enhance practice in teaching and learning)	25 hours per session	Capped at 50 hours per calendar year where actual weekly or intensive teaching is undertaken, i.e. no allocation provided if teaching is not undertaken in, for example, Session 3 or for guest lectures, and as agreed by DHOS
Off-shore International teaching allocation	40 hours/unit/session (regardless of multiple off-shore locations)	Note: Tianjin allocations are provided for on the basis of on-shore 1st year units

Title	**Weighting**	**Notes**
Enrolment and completion of a unit in the Graduate Certificate of Academic Practice	150 hours per unit	Capped at a maximum of two units per year.
Teaching Scholarship	Up to 20% (345 hours)	**Available to Teaching Scholars only**. Hours negotiated with Group Lead Includes work such as: - the collection and collation of evidence of one's teaching effectiveness - reflection on one's teaching practice and the learning of students within the context of a particular discipline - communication and dissemination of aspects of practice and/or theoretical ideas about teaching within a discipline or more generally - curriculum development such as new course development

Appendix P: Complete results from the data gathering

Table 8. Results of all data analysis presenting emerging themes, themes and categories.

Participants	Emerging themes	Theme	Category
Clinically practicing Registered nurses	The ward was too hot so she got out What is the agenda of nursing education? Trust me you're not a nurse Graduates are like a box of chocolates	The young of nursing	Seeking improved learning outcomes: The call to transform the Bachelor of Nursing
Academic staff	Did they learn anything? Yes they learned—not sure what though! Did they learn just because they liked it?	It's virtually all about the outcomes	
Clinically practicing Registered nurses	I feel connected in the real-world The wandering star of nursing What's the agenda of nursing education? It's virtually all about the outcomes Watch me and learn from my mistakes	Community of practice	Learning is virtually connected learning
Academic staff	Do you sense a connection? What motivates you to learn in SL?	Learning together is better	

Participants	Emerging themes	Theme	Category
	Kindred spirits		
Undergraduate nursing students	I am a virtual visionary With a little help from my friends Virtual learning is fun for everyone!	Let's pitch in and learn!	
Clinically practicing Registered nurses	Please Sir, can they have some more please? Virtual learning with practical benefits I know just what they need	More experiential learning	Experiential learning can be virtual
Academic staff	Did they learn anything? Yes they learned—not sure what though! Did they learn just because they liked it	It's virtually all about the outcomes	
Undergraduate nursing students	Get out the putty and fill the gaps SL—what is it good for? There is nothing like real pretend learning Where are the real patients—let me at them!	The potentials of learning in SL	
	Patient safety before student learning Don't let the children near her she is old and she bites I see some over here Richard	A short staffed day keeps the nice nurse away	

Participants	Emerging themes	Theme	Category
Clinically practicing Registered nurses	I'm too busy to be nice		The needs of learning in contemporary nursing education
	This spread does not equal quality Virtual learning—yeah right! Virtual learning with practical benefits Nursing is practical; ipso facto 'Appy students like to learn in virtual platforms	Changing curriculum	
Higher education academics	Learning on the hop That's the sound of the man working on the chain gang	Who's got the money?	
Undergraduate nursing students	Get out the putty and fill the gaps Where are the real patients—let me at them Look into my eyes Love the virtual learning Excited to learn	I want more real practice	
Clinically practicing Registered nurses	Virtual learning is not stressful—virtually Virtual learning is a little more real than real-life learning Watch me and learn from my mistakes I'll learn more if you teach me virtually Patient safety before student learning	Virtual learning	

Participants	Emerging themes	Theme	Category
	Games are not fun but serious games are useful Ain't no mountain high enough Possibilities are endless 'Appy students like to learn		What influences adoption of technology for learning
Higher education academics	It's not all academic Whatever the diagnosis I'm shaking Did they learn anything? Yes they learned—not sure what though! Can we change the future? Do you sense a connection?	Learning in SL	
Undergraduate nursing students	Have you ever…? Green eggs and ham Second what now? I'll keep a few of my favourite things handy Technology is the new black With a little help from my friends	Learning is nioce; it's different	
	An easy road is the one students travel What's age got to do with it? Dib dob Tell me why and I might follow	Learning requires preparation	

Participants	Emerging themes	Theme	Category
	Relax—no one is liking at you No means no First impressions were wrong! SL is like a pair of jeans—it takes some getting used to		
Clinically practicing Registered nurses	You can take the hospital out of the education… Is this EBP? Nerds and nurses don't mix	Is the technology good and are the people good enough?	Technology enhanced learning: SL in practice
Higher education academics	Kindred spirits Learning on the hop What was all the fuss about? One apple for and orange What motivates you to learn in SL? Rolling out technology is like a bottle of wine I know nothing about it but I have my thoughts Technology bugs me Technology glitches Did someone say this would be difficult?	Working in SL	
Undergraduate nursing students	What's age got to do with it? Same difference	Comparing SL to traditional learning	

Participants	Emerging themes	Theme	Category
	Virtual learning is fun for everyone Easy peasy Look into my eyes Love the virtual learning SL—Oh are we meant to be learning? Virtual world opens up the real-world I am a virtual visionary		
Clinically practicing Registered nurses	Virtual learning is not stressful—virtually Excited to learn I'm too busy to be nice Games are fun but serious games are useful	Learning in SL—emotions	Feelings are important when learning in SL
Higher education academics	Formative assessments make me stressed Technology bugs me What was all the fuss about? A sense of pride Did they learn something just because they like it?	The hormones of learning	
Undergraduate nursing students	Relax—no one is looking at you My real self gets in the road of my learning sometimes Does my avatar bum look big in this?	The emotional rollercoaster of learning in SL	

Participants	Emerging themes	Theme	Category
	Love the virtual skin you are learning in SL is like a pair of jeans—it takes some getting used to Tell me why and I might follow I'll keep a few of my favourite things handy Virtual learning is fun for everyone Love the virtual learning SL—oh are we meant to be learning?		
Higher education academics	My avatar thinks and looks like me My avatar lets me be who I want to be	Working in SL	Looking good sister!
Undergraduate nursing students	A virtual nurse is a naughty nurse Love the virtual skin you are learning in Relax—no one is looking at you Does my avatar bum look big in this? My real self gets in the road of my learning sometimes	Looks are important for effective learning	

Appendix Q: Excerpt from discipline meeting minutes denoting a lack of student attendance to on-campus lectures

2nd year liaison meeting between session 1 UAs for 2nd year units
Date/time: June 16 2014, 2.30-3.30pm
The meeting's purpose was to review session 1 2nd year units and discuss:

- What went well
- How the unit was delivered & associated assessments
- Concerns, or improvements to be considered for 2015
- Any other matter the UAs would like to discuss
- Student feedback from unit evaluations

Unit Assessors (UAs) reported individually on the points above then elicited feedback from the other attendees. Student feedback not yet available to UAs; so could not be factored into this meeting for discussion. Minutes have been reported as dot points by Leeann and verified by attendees prior to distribution to nursing faculty.

NRS20001 Formation Based Learning: Primary care—(Numbers enrolled = 240)

- First time ever run the unit, and it was a big unit to run.
- Unit was a double-weighted unit and delivery comprised streamed lectures between campuses, a tutorial and labs. Students also attended a one week placement, in two cohorts during the course of the session
- Frances had no time to alter assessments and many aspects of content
- Assessments included an individual literature review, a group poster project, and 2 videotaped simulations
- The first videotaped simulation had a number of technical issues for students and staff relating to uploading and downloading issues. With support from IT and Digital Resources, a 2nd videotaped simulation went much more smoothly
- **Poor attendance was noted for the one hour lecture, which was a little embarrassing as some of the lectures were guests and experts in their field—need to improve for next time, possibly have online lectures –but given the lack of face-to-face attendance overall for the 2nd years—face-to-face delivery might help them to engage—explore possibility of not recording the lectures**
- For casual markers, there were some problems with expertise in marking written assessments
- One marker consistently did not meet deadlines to mark assessments and provide feedback—some students very disadvantaged and very unhappy—created inequities as some had to wait 4 more weeks after most students received feedback
- Frances would like to elicit feedback from those teaching into the unit but aware that casual staff have now finished their contracts.
- Frances to request feedback from all staff on ways to improve delivery, assessment, link between tutorials, labs, lectures, and primary care prac

Chair's reflections post the meeting

- UAs are being faced with what would seem an ever increasing workload that is not aligned with workload allocations.
- High satisfaction rates by students are expected by the university and possibly more support needs to be given to UAs to achieve these outcomes
- New UAs should have a support system in place so they do not feel so isolated
- Students are struggling with some online units, and thought needs to be given as to how to support them better
- It may have been very useful for a representative from Teaching and Learning to attend but Leeann did not organise this in time!

Appendix R: Excerpt from the information guide for course that offered Second Life formative pain assessment

About this unit | 3

Explores nursing responses to changes in health status. This is the second in a series of four units. Through case-based learning students will build upon and apply knowledge and skills related to chronic illness and disability. Practice in nursing laboratory sessions and simulated rehearsal prepares students for professional experience placement.

Content

- Introduction to chronic illness and disability
- Nursing care strategies in caring for individuals with a chronic illness
- Chronic cardiovascular and respiratory conditions
- Pharmaco-therapeutics and technologies in the care of chronic respiratory disease
- Chronic renal and gastrointestinal conditions
- Pharmaco-therapeutics and technologies in the care and management of chronic renal, urinary and gastrointestinal disorders
- Principles of intravenous medication administration
- Chronic central nervous system conditions
- Chronic skin conditions
- Pharmaco-therapeutics and technologies in the management of chronic nervous system conditions
- Chronic wound assessment and management
- Pharmaco-therapeutics and other products used in the care of skin and wounds
- Pain theory
- Pharmacological concepts in pain management
- Introduction to palliative care
- Pharmaco-therapeutics and technologies in palliative care
- Grief, mourning and loss

Graduate attributes and unit learning outcomes

As a graduate of Southern Cross University, you will have developed skills, values and attitudes that are essential for gaining employment and advancing lifelong learning. The University refers to these as graduate attributes (http://policies.scu.edu.au/view.current.php?id=00091#s3) and identifies them as follows:

GA1 Intellectual rigour, GA2 Creativity, GA3 Ethical practice, GA4 Knowledge of a discipline, GA5 Lifelong learning, GA6 Communication and social skills, GA7 Cultural competence.

This unit will assist students to develop the following graduate attributes (shown below as they relate to this unit's learning outcomes):

Learning outcomes for this unit	GA1	GA2	GA3	GA4	GA5	GA6	GA7
On completion of this unit, students should be able to:							
1. Describe the influence of social determinants and cultural factors on health and chronic illness	✓			✓			✓

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Learning outcomes for this unit	GA1	GA2	GA3	GA4	GA5	GA6	GA7
2. Describe and discuss the models of care and principles of nursing practice as applied to caring for a person with chronic illness	✓			✓			✓
3. Describe and discuss the pathophysiology and pharmacological management of common chronic illness conditions	✓			✓			
4. Demonstrate integration of knowledge, medication management, and nursing skills relevant to chronic illness and appropriate to scope of practice	✓			✓			
5. Conduct a comprehensive health history, including assessment of environmental, social and family history factors for individuals with chronic illness and/or disability	✓			✓			
6. Demonstrate and use the principles of evidence based nursing to devise strategies to promote independence, wellbeing and quality of life for individuals with chronic illness	✓			✓			

Studying this unit

The first step in managing your study for this unit is to familiarise yourself with this document and the MySCU (http://learn.scu.edu.au) Learning Site. You should refer frequently to the MySCU Learning Site for announcements and updates.

For this unit, students will be provided with self-directed student workbooks. Students will need to work through the suggested readings and activities prior to attending tutorials and labs. It is important to work through the materials each week as knowledge of some of the content will be assessable in the case study quizzes. Workbooks will be made available on the MySCU Bb site.

Estimated workload

Scheduled hours	Personal study	Total
77	223	300

Your scheduled study hours are allocated as follows:

Campus A

Teaching method	Duration	Frequency
Lecture online	2 hours	Weeks: 1-6, 8-12
Laboratory session	3 hours	weeks:1-6, 8-10, 12-13
Workshop on-site	2 hours	Weeks: 1-6, 8-10, 12-13

Campus B

Teaching method	Duration	Frequency
Lecture online	2 hours	Weeks: 1-6, 8-12
Laboratory session	3 hours	Weeks 1-6, 8-10, 12-13
Workshop on-site	2 hours	Weeks 1-6, 8-10, 12-13

Campus C

Teaching method	Duration	Frequency
Lecture online	2 hours	Weeks: 1-6, 8-12
Laboratory session	3 hours	Weeks: 1-6, 8-10, 12-13

Assessment

Assessment overview

This is a graded unit and grades are awarded as detailed in Rule 3.8 of the University's Rules Relating to Awards (http://policies.scu.edu.au/view.current.php?id=00140#s8). To achieve a passing grade in the unit all assessment tasks must be submitted and an overall mark of 50% or more must be obtained for weighted items and a Satisfied Requirements must be obtained for unweighted items.

For full assessment details please refer to Student Assessment Guide located on the NRS20004 Blackboard site.

Attendance: we recognise the relationship between attendance, participation, student success and retention. Any session or engagement opportunity missed, regardless of the reason, can decrease the opportunity for learning and so may impact unfavourably on your results.

It is expected that students attend ALL workshops and laboratory sessions in this unit. Attendance and participation at a total of 80% of workshops and laboratories is required to be eligible for a pass in this unit.

In the event of a missed session, it is the student's responsibility to access content missed by engaging with the Blackboard learning site unless otherwise negotiated with the Unit Assessor. In the event of a missed lab session, an application for Special Consideration (http://scu.edu.au/students/specialconsideration) must be submitted on each occasion to student services in the usual manner.

Assessment	Group/ individual	Learning outcomes	Grading indicator	Min Score	Weight	Length/ duration	Due	Professional accreditation
1. Case study	Individual	1, 2, 5, 6	Graded	N/A	50%	45 mins per week	Weeks 6,8,10,12	Assessment 1
2. Exam: viva	Individual	4	Ungraded	N/A	SR	30 minutes	Weeks 11	Simulation assessment
3. Numeracy Exam	Individual	4	Ungraded	N/A	SR	1 hour	Weeks 9	Assessment 3
4. Exam: closed book	Individual	3	Graded	N/A	50%	2 hours	Exam Period	Assessment 4

Assessment details

Assessment 1: Case study

This assessment is for these students only: Campus A, B and C.

Assessment	Group/ individual	Learning outcomes	Grading indicator	Min Score	Weight	Length/ duration	Due	Professional accreditation
Case study	Individual	1, 2, 5, 6	Graded	N/A	50%	45 mins per week	Weeks 6,8,10,12	Assessment 1

Building on weekly activities undertaken in tutorials and guided workbooks, this assessment task involves assessing students' knowledge relating to incidence, signs and symptoms, diagnosis, and management of specific chronic illnesses. In total, you will be required to complete four open-book online quizzes.

Assessment 2: Exam: viva

This assessment is for these students only: Campus A, B and C.

Assessment	Group/ individual	Learning outcomes	Grading indicator	Min Score	Weight	Length/ duration	Due	Professional accreditation
Exam: viva	Individual	4	Ungraded	N/A	SR	30 minutes	Weeks 11	Simulation assessment

Weighting: Satisfied requirements/Non-satisfied requirements

Building upon weekly activities undertaken during laboratory sessions this assessment task involves individual students demonstrating their ability to meet a set performance criteria during a scenario-based high-fidelity patient mannequin simulation. A number of different scenarios will be used and students will be randomly assigned to one of these. Students will have the opportunity to nominate a time for the examination, and available times may vary from campus to campus.

Assessment 3: Numeracy Exam

This assessment is for these students only: Campus A, B and C.

Assessment	Group/ individual	Learning outcomes	Grading indicator	Min Score	Weight	Length/ duration	Due	Professional accreditation
Numeracy Exam	Individual	4	Ungraded	N/A	SR	1 hour	Weeks 9	Assessment 3

Weighting: Satisfied requirements/non satisfied requirement. A 100% is required to satisfy requirements.

Building upon activities undertaken in Week 2 tutorials and laboratories this assessment task involves students demonstrating their ability to accurately interpret and correctly calculate intravenous medication orders during an online exam. Date and time may vary from campus to campus dependent on tutor and room availability.

Assessment 4: Exam: closed book

This assessment is for these students only: Campus A, B and C.

Assessment	Group/ individual	Learning outcomes	Grading indicator	Min Score	Weight	Length/ duration	Due	Professional accreditation
Exam: closed book	Individual	3	Graded	N/A	50%	2 hours	Exam Period	Assessment 4

Timetables

Week/ commencing	Topic	Notes
1 11 Jul 2016	Nursing care strategies in caring for individuals with a chronic illness	
2 18 Jul 2016	Principles of Intravenous (IV) medication	Numeracy tutorials will be held in place of chronic illness tutorials. The same person is teaching numeracy at all sites, so regular tutorials times have been moved at some sites. Please refer to online timetable and/or MySCU Blackboard for full details
3 25 Jul 2016	Pain theory and pharmacological concepts in pain management. Pharmaco-therapeutics and technologies used in the management of chronic musculoskeletal conditions	
4 01 Aug 2016	Introduction to palliative care. Pharmaco-therapeutics and technologies in palliative care. Chronic skin conditions (non-melanocytic skin cancers and melanoma) & pharmaco-therapeutics	
5 08 Aug 2016	Technologies in the care of chronic respiratory disease	2nd life pain assessment skill review.
6 15 Aug 2016	Chronic respiratory conditions, and pharmaco-therapeutics	Quiz no. 1—Arthritis/ chronic pain/analgesia. 2nd Life pain assessment skill review (con).
7 22 Aug 2016	Study Week	NPA on-line IV medication safety module assessment due.
8 29 Aug 2016	Chronic cardiovascular conditions	Quiz no. 2—COPD/ Asthma. IV skill review (on-campus)
9 05 Sep 2016	T2 Diabetes Mellitus	Numeracy exam (on-campus). Respiratory skill review (on-campus)
10 12 Sep 2016	Chronic renal, urinary and gastro-intestinal conditions, pharmaco-therapeutics and technologies	Quiz no. 3—CVD/CHF
11 19 Sep 2016	Chronic CNS conditions, pharmaco-therapeutics and technologies. NO SCHEDULED TUTS OR LABS	Simulation assessment
12 26 Sep 2016	Chronic CNS conditions continued—Alzheimers disease	Quiz no. 4—DM/CKD
13 03 Oct 2016	Chronic wound assessment and management	