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Economising learning: How nurses maintain competence with limited resources

A Thesis submitted by

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Abstract

Economising learning: How nurses maintain competence with limited resources

Continuous learning is essential for registered nurses to maintain knowledge of current best practice, and therefore facilitate the best possible outcomes for patients. Gaining access to learning, and the time to engage in learning, requires the nurse to contribute personal resources such as time and money. Nurses often have limited access to learning while at work due to staffing levels and the fast pace of the work environment. They often have limited resources outside of work hours to contribute to their learning. Therefore alternative strategies for learning need to be explored to enable the nurse to continuously learn.

This research sought to discover how registered nurses were currently using mobile devices in their work and private lives, to ascertain if mobile learning would be of value in nursing education and where it would be best used. Nurses mostly did not have concerns about using mobile devices, however, it became evident in interviews that they were mostly concerned with maintaining competence with limited resources.

This classic grounded theory research revealed that nurses economise learning to enable them to address their concern of maintaining competence with limited resources. They achieve this by balancing personal resources against motivational issues within the continuous process of economising learning.

The process of economising learning commences and ends with the nurse's personal curriculum, which has been developed throughout the nurse's career, and is what the nurse identifies as important learning needs within the work area. Nurses become aware of a learning need when their personal curricula are compromised or they become aware of other knowledge that is needed for their work area. The learning opportunity to meet the learning need will be found and balanced by individual nurses, to determine if and how they will engage with the opportunity. Finally nurses will engage or not in the learning and update their personal curricula accordingly.

The Theory of Economising Learning, together with the reviewed literature has led to the development of a Healthy Learning Workplace Model to determine and

improve the health of the workplace in regard to learning. The model contains the four domains of expectations, current, economical access, and support. Each of these domains needs to be occurring at the optimum level in order for learning to be 'healthy' within the organisation and have nurses undertaking continuing learning.

Certification

This thesis is entirely the work of Sharon Rees except where otherwise acknowledged. The work is original and has not previously been submitted for any other award, except where acknowledged.

Student and supervisors signatures of endorsement are held at USQ.

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Table of Contents

Table of Figures

1 Chapter 1 - Introduction

1.1 Introduction

Learning is crucial in maintaining a workplace that is focused on the application of best practice, no more so than in an area as critical as health. To provide the most appropriate care to patients, it is expected that nurses will continue learning to ensure best practice. There are, however, many barriers to nurses engaging with learning opportunities. Mobile learning is one learning modality that could potentially reduce these barriers.

Grounded theory methodology was used to investigate how nurses are currently using mobile devices in their personal and work lives. It was found that the nurses' main concern was not the use of mobile devices *per se*, but was maintaining competence with limited personal resources. Nurses used mobile devices to overcome barriers to learning; however, nurses also needed choice in learning methods to enable them to use the method most suitable to them. This thesis will identify the behaviours that nurses use to overcome barriers to learning and the factors that impact on them through the Theory of Economising Learning. From the developed theory and the wider literature, recommendations for a healthy learning workplace have been formulated and presented in the Expectations, Current, Economical access, and Support (ECES) model.

1.2 Personal statement

Prior to undertaking this research, I had worked as a nurse educator. The modalities through which I could provide learning opportunities to staff were very limited, and accessing staff to undertake learning face-to-face was difficult. The education program I had developed was described by auditors in an organisation accreditation as being a highlight of the organisation; yet, I knew I was not reaching all the nurses. I had an issue with nurse engagement. Some staff were eager to engage in the learning offered, however, due to the demands of shift work, they could not attend face-to-face sessions. Paper-based learning packages were used, but had poor engagement. Online learning was difficult within the larger organisation due to regulations restricting what could be included on the organisation's intranet, and having only one computer in the district where online learning materials could be developed. Time to develop online learning was not approved. Mobile devices were

not allowed in the clinical areas, and were therefore not an option for learning. I found this very frustrating and returned to working as a registered nurse in a clinical area. I then found myself in the same situation as the nurses where I had worked previously: I wanted to learn, however to undertake learning, I needed to input much of my own time and needed to balance my motivation for learning with limited personal resources. This often resulted in me not undertaking the learning, and not obtaining the knowledge that I expected of myself. These experiences have inspired me to search for better ways of engaging nurses in learning, which could be both economical for the organisation and for the registered nurse. Mobile learning was identified as a possibility. It is my hope that this research can be used to improve nurses' learning engagement within organisations and ultimately improve nurses' use of best practice, resulting in good patient outcomes. I have entered into this research with strong personal convictions that have the potential to influence the research. As will be discussed in Chapter 3, my assumptions about the area being researched were documented, and used as another source of data to limit their impact.

1.3   Research question

This research sought to develop a theory that would answer the question of: Where is mobile learning best used in the continuing professional development of registered nurses. Through the use of grounded theory methodology this was achieved; however, it became evident that this was not an issue to address in isolation. Within the interviews, nurses discussed various issues that impacted on their learning, and the behaviours they used to include learning within their personal and work lives. Nurses discussed mobile learning as just one part of this. This research has made an original contribution to research through identifying nurses' behaviours concerning continuing professional development, resulting in the Theory of Economising Learning. Furthermore, a model has been developed to assess and give structure to organisations' further development of a healthy learning workplace. These findings will be outlined in Chapter 4, the Theory of Economising Learning, and in Chapter 6, where it is described how the Theory of Economising Learning and the literature have led to the development of the ECES Model of a healthy learning workplace.

1.4   Background

The history of nursing in Australia gives some insight into the way education is generally provided within health organisations. Nursing has been based on apprenticeship training, with a largely task-based orientation (Kako & Rudge, 2008; McDonald, 2010; S. Nelson, 2001). This has meant that nurses were learning by doing until 1985, when the shift started to university-based learning (The Department of Health, 2013). Since these earlier years, nurses have developed their own curriculum, in contrast to being previously medically based, and have forged a professional identity (Kako & Rudge, 2008). The apprenticeship model still influences how learning occurs today with much learning coming from face-to-face methods and learning on the job. However, it has become increasingly difficult for educators to access staff for education during work hours (Katsikitis et al., 2013).

Continuing professional development is essential in maintaining a nursing workforce that is up-to-date with best practice, and able to provide quality care to patients. Over recent years, chronic illness prevalence has increased, demanding more of both the hospital and primary care services. Additionally the population is also aging which places yet greater strain on the health system (Mason, 2013). This results in nurses in both the community and hospitals needing knowledge of best practice and the ability to acquire knowledge quickly when faced with knowledge deficits. The importance of continuing professional development is reflected in the requirements for nursing registration.

Since the introduction of the national registration of nurses in 2010, nurses are required to complete twenty hours (20 points) of continuing professional development (CPD) per year, to maintain registration (Ross, Barr, & Stevens, 2013). Continuing professional development is also needed to ensure compliance with legislation. Examples of this would include the Workplace Health and Safety Act, The Building Fire Safety Regulation and The Aged Care Act. Nurses, however, face numerous barriers to undertaking learning.

Staff shortages or issues with skill mix have meant that nurses are often prevented from attending education within normal work hours (Coventry, Maslin-Prothero, & Smith, 2015). With a predicted shortage of nurses from the current year (2016), this scenario is likely to worsen (Mason, 2013). Nurses are currently investing personal

time and finances to attend education outside of their work hours, which impacts on families and leisure time (Coventry et al., 2015; Katsikitis et al., 2013). Learning via digital technologies is one of a range of options for improving nurses' access to education when and where it is convenient to them (Ousey & Roberts, 2013). Mobile learning could play a part in this form of learning, and in some instances might already be happening. However, this is yet to be fully explored.

Mobile learning has been used in discrete projects within nursing and other health care professions, mainly with undergraduates. Its successes indicate that it is a mode of learning that potentially provides benefits for the learner (Chuang & Tsao, 2013; Clifton & Mann, 2011; Wu, Hwang, Su, & Huang, 2012) and is therefore an important method to explore in order to potentially improve access to learning for postgraduate nurses. The potential of mobile learning occurring anywhere and anytime is considered a large advantage for learning (Clifton & Mann, 2011). It is therefore appropriate to investigate the use of mobile devices for learning within nursing. Mobile learning is not usually the sole delivery modality for a learning activity, as advantages can be maximised by using mobile education alongside other methods of education (Johnson, Adams, & Cummins, 2012). Apart from the topics mentioned above, the literature review was kept to a minimum at the beginning of the research.

It is not usual to conduct a literature review around the substantive area at the beginning of a grounded theory research study. Reading in the substantive area is likely to lead to the formation of preconceived concepts in the researcher's mind, and thus interferes with the true emergence of concepts from the participants. However, knowledge in the area is built by reading the literature around the peripheries of the research (Glaser, 1998). Therefore, the literature review for this research was initially conducted generally in the area of mobile learning and continuing nurse education in order to substantiate the importance of research into this area. An in depth literature review was then conducted around the substantive area, after the development of the Theory of Economising Learning. Concepts in the literature were compared to the concepts generated from the research data (Glaser, 1998), and are presented in Chapter 5 of this thesis.

1.5 Methodology

This research has been conducted using Glaser's approach to grounded theory (classic grounded theory). Little is known about how nurses currently use mobile technologies and therefore the issues around the introduction of mobile learning into postgraduate education are poorly understood. Grounded theory is a methodology ideally suited to research in areas where little is known and is appropriate for this study as it allows the main areas of concern to emerge naturally in response to discussion (Artinian, Giske, & Cone, 2009).

As new technologies emerge and nurses become more comfortable with their use, the concerns of nurses when using mobile technologies will probably evolve. A particular advantage of grounded theory is that it allows the theory to be continually developed through constant comparison to new data (Glaser, 1998). Therefore, the theory developed through this research has the ability to evolve with the changing behaviour and experiences of postgraduate nurses in response to emerging technologies.

Grounded theory was developed by Anslem Strauss and Barney Glaser in 1966 (Glaser and Strauss, 1966). Since this time, both Strauss and Glaser have taken the methodology in different directions, giving rise to essentially two methodologies. Others have also varied the initial methodology, with the most prominent being that formulated by Kathy Charmaz. Charmaz completed her PhD with Glaser as her supervisor, however, according to Simmons (2012) she has taken a more constructivist approach compared to that of Glaser and Strauss, whom she claims are objectivist. It is argued by Simmons (2012) that Charmaz' approach forces the data, by forming concepts straight from the data and in interviewing using preconceived questions. Throughout this thesis, when grounded theory is discussed as a whole the term methodology will be used. When the different versions of the methodology are discussed the term method will be used.

There is much discussion regarding which approach to use, with researchers polarised by which method of grounded theory is more appropriate with solid arguments for each. Each method addresses the reason grounded theory was chosen for this research, in that it is being used to explore an area where little is known. Glaser's approach was chosen as it appeared to have a greater flexibility in the

analysis of data, rather than what appeared to be a more regimented analysis with Strauss and Corbin's method, which could inhibit the development of a theory. Glaser's approach is therefore more likely to identify a pattern of behaviours and result in a theory rather than a description of the substantive area (Glaser, 1998; Heath & Cowley, 2004).

People who identified as being registered nurses were included in the research. The research was focused within Queensland, Australia; however some interviews were conducted with registered nurses located in South Australia, Northern Territory, New South Wales, and Victoria.

1.6 Theory

Grounded theory is considered to be an explorative methodology, and therefore, what the researcher expects to find in the research area may not be what is actually found. Grounded theory was proven to be the appropriate methodology for this research, as what the researcher expected to find were drivers and inhibitors of using mobile devices in the workplace. This, however, was not the main concern of the participants. It was soon obvious that to introduce mobile learning into nursing education, nurses needed assistance to address their overall concern of maintaining competence, while balancing their personal resources and motivational issues for learning. It also became apparent that the nurses did not differentiate between mobile learning and e-learning. Using mobile devices for learning was identified as a behaviour which assisted nurses to undertake learning within their limited resources. Also critical to nurses' engaging in learning, was the development of their perceived learning needs. As could possibly have been predicted, the organisation had a significant influence on nurses' engagement in learning, both within and outside of working hours.

The Theory of Economising Learning was developed from the data and is based within the context of the organisation. It was found that the organisation affects an individual's learning, both while at work and while learning in their own time. Economising Learning is a continuous process that a nurse is engaged in. The process includes gaining awareness of a need for learning, and identifying the learning opportunity. The person then balances the motivational factors for undertaking learning against the personal resources they have available to them, such

as time and finances, to decide if they can engage with the learning opportunity. Nurses use various strategies, as will be discussed in Chapter 4, to minimise the personal resources needed to engage in learning. It was found when enacting these strategies, that nurses often used informal mobile learning. After balancing and making a decision to engage or not engage with learning, nurses, if engaging in learning, will learn on the run, pre-emptively, or engage in credentialed (formal) learning. Regardless of whether they do or do not engage in learning, they will then re-define their individual curriculum due to this latest experience. The process is then repeated when they next gain awareness of a knowledge deficit that threatens their individual definition of competence. The process has been named "Economising Learning", as nurses aim to achieve the best learning outcome with limited personal resources available to them.

1.7   Discussion of the theory in relation to the literature

After the theory was developed, the relevant literature was then able to be identified and reviewed to situate the theory within the literature. Three theories of motivation were reviewed with aspects of each being relevant to the findings. Self-efficacy Theory (Bandura, 1977, 1989)), the Theory of Planned Behaviour (Ajzen, 1991, 2002, 2011; Ajzen, Joyce, Sheikh, & Cote, 2011), and Self-Determination Theory (Deci & Ryan, 2008; Gagne & Deci, 2005 were identified as being relevant. These theories complement the Theory of Economising Learning and give further insight to facilitate the application of the multiple theories to increase motivation in learning. The theories have significant influence on the ECES Model.

The work of nursing theorist Patricia Benner is also very relevant to this study with her Theory of Novice to Expert (Benner, 2001). Benner's model complements this theory through further explanation of prior experience specifically related to the registered nurse. Prior experience is also considered relevant in the broader community in relation to workplace learning. It is recognised that the learner will come to every situation with a unique set of experiences and expectations (Billett, 2008; Eraut, 2000, 2004). Nurses will also have unique circumstance that will influence the type and amount of learning they are able to undertake.

The literature supports the findings of this research that nurses are contributing personal resources to their continuing learning in relation to time and finance

(Coventry et al., 2015; Dowswell, Bradshaw, & Hewison, 2000; Thoidis & Pnevmatikos, 2014). Technologies have changed the learning environment, allowing learning to be occurring outside of the normal classroom situation. The possibilities related to these technologies are changing at a fast rate due to the emergence of new technologies and the innovation of how people are using them to influence their learning space (Billett, 2004; Torres Kompen, Monguet, & Brigos, 2015). It was found in this research that nurses were using mobile technologies to allow them to multitask, catch time, and stay connected, thereby reducing the use of their personal time for learning.

1.8 ECES (Expectations, Current, Economical Access, and Support) Model

Through the combination of knowledge gained from the Theory of Economising Learning and literature reviewed in the discussion chapter, a model was developed to guide the development of a healthy learning workplace. The model includes four domains: 1) Expectations, 2) Current (as it pertains to education), 3) Economical access and 4) Support. The domains are inter-related, and dependent on each other, to contribute to the health of learning within the workplace. Each of the domains must be healthy to ensure that nurses within the work unit have an environment within which they are motivated and have opportunity to learn.

The domain of **expectations** relates to the expectations of the work group in regard to standards of knowledge and patient care. A group with high expectations will influence individual's perception of competence and motivate them to achieve a higher level of competence. The converse is also true. If a group has low expectations, the expectations of competence will be lower and individuals will not be motivated to learn. This domain is not related to what is stated by the administration of an organisation, but is dependent on the lived experience of the individual.

Current refers to the flow of learning opportunities available to the individual originating from the organisation. This can be likened to a stream where if the flow or current of water is not sufficient water will stagnate, but will maintain its vitality if the current is adequate. The individual nurse will require the educational current to be sufficient to meet their educational needs when the knowledge is needed, but not

too much so they are flooded and therefore overwhelmed by information. The education provided must be relevant to the nurse and originate from a source the nurse identifies as trustworthy.

Economical access to learning opportunities enables individuals to access education that will meet their knowledge requirements within their available personal resources. The learning should be provided via a mode that allows individual nurses to undertake the learning efficiently, dependent on their personal preferences and level of experience. Mobile and e-learning opportunities are an important mode of providing learning to nurses that will allow them to learn at a time and place suitable to them. This allows nurses to take advantage of opportunities to use time to their best advantage.

The **support** an individual receives will influence the amount of learning undertaken in personal and work time. The amount and type of support for learning directly impacts on the resources a nurse will need to personally contribute to undertake a learning opportunity. If the resource requirements are reduced, this will allow an individual to undertake more learning. It is crucial that support be given to educators to enable them to develop education in appropriate modes for staff and managers to have the knowledge needed to promote a healthy learning workplace.

1.9   Outcomes and significance

This thesis provides a valuable contribution to nursing knowledge by giving insight into how mobile technologies can be best used to enhance nurses' continuing learning. Together with situating mobile learning, the thesis provides important insight into the process of nurses' learning engagement. Continuing professional development is crucial in maintaining a nursing workforce that is able to apply best practice to patient care and thereby provide a safe and therapeutic healthcare experience for individuals. The ECES Model for a healthy learning workplace provides a valuable tool to identify gaps in current education practices within an organisation, and gives a framework to improve learning culture.

1.10 Recommendations and conclusion

Recommendations from this research are largely focused on how the organisation is able to support nurses meet their main concern of investing in learning to maintain competence. Each domain of the ECES model describes support that will influence

these behaviours and improve motivation for learning. Further research will be required to develop an instrument that is able to measure each of the four areas of the ECES Model, to give organisations quantifiable information regarding their education culture and areas that could be improved.

Mobile learning is significant in this approach and therefore recommendations have been given to support nurses in using their mobile devices to their best advantage. Nurses are currently not identifying that mobile learning and e-learning differ as they expect e-learning to be available via their mobile device. It is therefore important to ensure that e-learning is able to be conducted via a mobile device, giving nurses opportunity to learn at a time a place that is suitable to them.

Mobile technologies have many other affordances apart from e-learning that are currently not being used with learning in nursing. This will change as nurses become more familiar with those technologies. They will then be able to expand further into using the other affordances that make mobile learning differ from that of e-learning, and give nurses a more valuable learning experience. The use of these technologies both within and outside of the hospital environment will need further research.

1.11 Conclusion

This chapter has provided an introduction to the thesis, providing an overview of content. It has been identified that this research will provide valuable insight into the behaviours and concerns of postgraduate nurses in relation to continuing education and the use of mobile devices. The ECES Model for a healthy learning workplace has been introduced and will be explored in depth later in the thesis. The following chapter will provide a background to continuing education for registered nurses. Current issues in nurses continuing learning will be identified and possibilities for overcoming these issues with mobile learning explored.

2   Chapter 2 - Background

2.1   Introduction

Continuing professional development is essential in nursing to ensure that nurses are implementing current best practice. Healthcare is a constantly changing field, with the complexity of patients increasing over recent years (Tones, Pillay, & Fraser, 2010). Nurses, therefore, need to achieve good patient outcomes while caring for sicker patients within limited resourcing. Due to this changing environment in health care, and the complexity of patient needs, nurses need to maintain knowledge and skills (Tones, Pillay, & Fraser, 2010). It has become increasingly difficult for educators to access nurses for education during work hours, and difficult to have nurses released to attend education due to staffing deficits (Katsikitis et al., 2013). It is, therefore, necessary to search for alternative methods of educating nurses that will allow nurses to access education when and where it is needed. Mobile learning is one strategy that could be leveraged to improve access to education for nurses. The question is, however, are nurses ready for mobile learning? This research will seek to discover from nurses, their current use of mobile devices in their private and professional lives and where the most value will be gained from the use of mobile devices in continuing nurse education.

An extensive literature review is not undertaken at the beginning of the research process when using grounded theory. However, literature is reviewed outside of the substantive area and used to determine a need for the research. In researching the background for this research, three areas needed to be reviewed in the literature. Firstly, it was necessary to gain an understanding of where mobile learning was being used in nursing education and determine from other disciplines what possibilities could be further explored with mobile learning. Secondly, it was necessary to gain an understanding of the historical and current aspects of nursing education in Australia that impact on engagement in learning. Finally, it was necessary to determine from the literature what the known issues are with registered nurses undertaking continuing education.

2.2   The role of the literature review in grounded theory

Grounded theory methodology is used to discover new concepts and generate a theory, and not to test research that has previously been conducted (Glaser, 1998; Stern, 1980). Grounded theory must, therefore, be independent of the literature while the data are being coded and conceptualised. Once the data have been developed into a theory through conceptualisation, it can then be compared to the literature at the end of the study, and the relevant literature woven into it. Through not pre-reading the literature, it is thought that the researcher is able to make an attempt at original research (Glaser, 1998; Stern, 1980).

As the research comes from the participants and their main concerns, conducting a literature review at the beginning of the study is frequently a waste of resources, as the concepts are generated by the study. They will only be known after the study is completed (Christiansen, 2011; Glaser, 1998; Holton, 2008). When conducted following data collection, however, emergent categories will lead the researcher across fields and disciplines that would not previously have been considered to be important. This strengthens the argument and results in giving other authors, with similar outcomes, credit for their work (Charmaz, 2006). Therefore, the literature will be discussed in relation to the substantive Theory of Economising Learning in Chapter Five of this dissertation.

Reading in the substantive area is likely to lead the researcher to form preconceived concepts, and interfere with the emergence of concepts from the participants (Charmaz, 2006; Christiansen, 2011; Glaser, 1998; Stern, 1980). Thus conducting a literature review before commencing the study could affect the basic principles of grounded theory, being the theory emerging from the data and not from existing theories (Holton, 2008). This, however, is problematic for people with prior knowledge of the literature, or those undertaking a PhD who need to undertake a literature review to meet university requirements (Dunne, 2010; McGhee, Marland, & Atkinson, 2007). In attempting to remain true to Glaser's grounded theory, I have followed Birks and Mills (2011) suggestion, that although a literature review is needed for a PhD proposal, it should be kept to a minimum. There are, however, no limitations for a literature review outside of the substantive area, where it is suggested the researcher reads widely (Glaser, 1998). Therefore the literature

reviewed in this chapter will be from what was initially considered to be outside the substantive area or to determine a need for research in the substantive area of where mobile learning is best used in continuing professional development for registered nurses.

2.3 Mobile learning
2.3.1 Defining mobile learning

There are numerous definitions of mobile learning which are often either highly exclusive, by only allowing specific devices, or overly inclusive by classifying many e-learning activities (Farley, Murphy, & Rees, 2013). For example, mobile learning is often defined in terms of the devices that are used. These definitions are often exclusive as new devices emerge that can be considered to be mobile, however, are for some reason excluded from being part of the definition. Kukulska-Hulme and Traxler (2005) include mobile phones (also called cell phones or hand phones), smartphones, palmtops and handheld computers (Personal Digital Assistants or PDAs), tablet PCs, laptop computers and personal media players as mobile devices. Since that list was compiled, tablets such as iPads have emerged onto the market, and PDAs have almost disappeared.

Traxler (2005) has also described mobile learning as "any education provision where the sole or dominant technologies are handheld or palmtop devices" (p. 262). Again, there are many devices that could reasonably be considered to be mobile that are excluded from this definition. The delivery of a course using Android tablets or notebook computers would not fit within this definition of mobile learning.

Mobile learning has also been defined in terms of the mobility of the learner or device; however, books are also mobile, and so any learning using books could be considered mobile learning by this definition. Therefore, any definition of mobile learning needs to cover both the technology broadly enough to include emerging technologies, and also include the context of the learning being anywhere and anytime. Osman, El-Hussein, and Cronje (2010) attempt such a definition by stating that mobile learning is "any type of learning that takes

13

place in learning environments and spaces that take account of the mobility of technology, mobility of learners and mobility of learning" (p. 20). This definition, however, then poses the question of what is a learning environment and space.

The definition that will be used for this research will be: "the processes (both personal and public) of coming to know through exploration and conversation across multiple contexts amongst people and interactive technologies" (Sharples, Taylor, & Vavoula, 2007, p. 225).

This definition was initially chosen as it is very broad and could include many digital devices including laptops, with the thought that the participants in the research would help further refine the definition. After completing the research, the above definition matches that of the participants. Participants in this research determined mobile learning was any learning they could achieve via a mobile device. This would often include undertaking learning that would traditionally be completed on a personal computer. They would swap between mobile device and personal computer depending on what best suited them at the time and in what context. Therefore, there was not a clear distinction between what was mobile learning and what was eLearning. As indicated by the above definition, mobile learning has the possibility of being used in multiple ways to engage in learning.

2.3.2 Social media

The use of social media in learning has been shown to improve student engagement in the classroom. Social media assist students to be more collaborative, assists in sharing of information and in preparation for the work environment that will also require collaboration (Roebuck, Siha, & Bell, 2013; Schmitt, Sims-Giddens, & Booth, 2012). Mobile devices are now being used increasingly in the classroom rather than laptops, as applications are now being developed that allow easy access from a mobile device (Roebuck et al., 2013). There is, however, little research that has been conducted specifically regarding social media and mobile devices for teaching, and therefore this is an area that needs to be explored further (Roebuck et al., 2013). It is assumed that due to

learning via social media, the nurse will develop competence in its use, and then be comfortable using social media in the workplace. Gibbons et.al., (2011) propose that social media has the potential to break down barriers in health care inequalities. Inequalities in health care occur in many countries. American research suggests that these inequalities occur in America, due to a person's socioeconomic status and ethnicity. The same research reports that Web 2.0 technologies have been embraced more rapidly in these disadvantaged groups due to them being able to access Web 2.0 technologies via their mobile phones. Therefore, they propose that the use of Web 2.0 technologies, including social media, accessed through mobile devices such as mobile phones, have the ability to decrease health care disparities through the connection of like groups of people. Through the use of social media, like people are able to share information and support each other in such things as exercise and smoking cessation (Gibbons et al., 2011). Gibbons and colleagues (2011) suggest that minority groups may be more open to the use of social media, and these technologies could, therefore, be used to improve patient care and participation. For this to occur, nurses as well as other health care professionals, also need to be competent in the use of these mobile technologies and communicate professionally using them (Schmitt et al., 2012).

2.3.3   Mobile video

Videos are available on mobile devices as a video podcast or vodcast. Video capability was first introduced with iPods in 2005. Since then, video has become available on a far wider selection of mobile devices. With improving hardware and internet accessibility, the videos are now of a higher quality (Cuddy, 2010). YouTube was originally developed for use on desktop computers. However, it is now one of the most popular websites for viewing videos, with a mobile application or 'app' for mobile devices. Another popular app used to download and watch video content is iTunes and iTunes U for universities. Additionally, universities are able to independently embed videos in course content, and enable them to be viewed via mobile devices (Cuddy, 2010).

Research has found that viewing videos assists students with developing critical thinking skills, facilitates deep learning, and also increases student engagement (Clifton & Mann, 2011). A major advantage of YouTube videos is that they are able to be accessed anywhere and at any time by students using a device of their choice (Clifton & Mann, 2011). A problem with YouTube, as with other unregulated sites, is that the origin of the videos needs to be checked, to ensure the video accurately reflects best practice. This can be addressed by prescribing playlists for students, to enable them to access relevant quality information (Brown, Lees, & Clay, 2010; Clifton & Mann, 2011; Cuddy, 2010). Following is an example of how mobile video was used in a post-graduate nursing environment.

The use of mobile video was demonstrated in a UK study (Clay, 2011). Nurses were given an iPod Touch with short videos covering each aspect of a neonatal examination. The nurses were able to access the learning at a time that suited them and were encouraged to have their mobile device with them in the workplace. The nurses could watch the videos prior to performing the procedure, then apply the learning or they could watch the videos at the same time as undertaking the patient assessment. The nurses reported that they gained flexibility in when and where they accessed the learning, and that they were more engaged in the learning due to the video materials (Clay, 2011).

2.3.4 Overcoming barriers of geographical distance

Mobile technologies were also used for the education of health workers in developing countries. The Irish Health Education Innovation (Iheed) report identifies that one of the main barriers to improving health outcomes for people in developing countries is the lack of trained health care workers (Callan et al., 2011). In order to reach health care workers in remote areas of Africa, mobile technologies were being used as part of distance education programs. In this context, health workers with smart phones were able to download videos, engage in video conferencing and connect to other health professionals using social media. Simpler methods using voice messages and texts were also used in the education of health workers to supplement printed materials. This has

resulted in improved education for health care workers (Callan et al., 2011). The strategies used in the Iheed education programs could be translated to the Australian environment for registered nurses.

As with Africa, Australia also has a large geographical area with many nurses being isolated from opportunities for continuing education. A study conducted by Kidd, Kenny, and Meehan-Andrews (2012) confirmed this, with nurses in the study stating they had a need for remote area-specific education. Rural nurses need to have a great diversity of knowledge and skills in order to competently address the needs of the people they provide a service for. This can be difficult as they can receive education but not apply it until much later. This lag between learning, and applying the learning to practice, results in the details of procedures and processes being difficult to recall (Francis & Mills, 2010; Kidd et al., 2012).

Added to the knowledge needed over diverse topics for rural nurses, is the inability to be relieved to attend face-to-face education (Francis & Mills, 2010). Mobile learning could potentially improve timely access to information for these nurses. Further, research would identify issues around the learning preferences of nurses or issues with mobile use for nurses in rural areas. These issues are likely to include challenges such as limited internet access.

2.3.5 Internet access

Mobile learning is often dependent on the availability of the internet. Internet connectivity and availability of the internet in domestic homes has increased over recent years; however is still not the available to all Australians. According to the Australian Bureau of Statistics (ABS) (2104), in the years 2012-13, 83 % of households had access to the internet at home, and 77 % of households had access via a broadband connection. This means that there was nearly a quarter or 23 % of Australian households that were without broadband access, and 17 % of Australian households without any access to the internet. Even though it is three years since these data were collected, there is still likely to be a significant proportion of households without internet access. A divide exists between metropolitan households and rural households with connection to the internet, however, this gap is narrowing. At the time of data collection, 85 % of households in metropolitan areas had internet

connection compared with 79 % of rural households (Australian Bureau of Statistics, 2014). The ABS, however, only reports access and not the quality of the access which can have a significant impact on online education.

The Australian National Broadband Network (NBN) was announced in 2009 (Freeman & Park, 2015). The objective of the NBN has been to increase access and speed of the internet to households and businesses throughout Australia through infrastructures such as optical fibre, satellite base stations, and wireless towers (Finch, Deveraux, James & Nott, 2014., Freeman & Park, 2015). Due to the promise of the NBN, some current infrastructure has been neglected, leaving some areas with poor or non-existent internet coverage (Freeman & Park, 2015). The NBN has been slow to reach rural areas, and hence these areas remain without quality access to the internet (Freeman & Park, 2015). This potentially maintains the divide between metropolitan and rural households in regard to access.

2.3.6 Short message service (SMS) and multimedia messaging service (MMS) for education

Some educators have used SMS messages to enhance students' learning. In a study investigating foreign language teaching, lecturers sent messages containing words from the target language and their meanings to students regularly during the day via SMS. The students reported that they enjoyed this method of delivery and that learning was enhanced by the repetitive messages (Cavus & Ibrahim, 2009). A project using similar methods was used to teach pharmacology to nursing students. In this study, the students received two SMS messages per day regarding medication dosage and indications. It was found that the students receiving the messages had a greater knowledge of medications at the end of the four weeks and these results were statistically significant (Chuang & Tsao, 2013).

Ahmed (2012) provided information through both audio and visual media via SMS/MMS and termed this mobile micro learning. Ahmed likened it to an improved flashcard system of teaching. The author reviewed the effectiveness of learning through these methods in three studies while altering the environment in which participants interacted with the learning. The study

proved that this style of learning enhanced retention and allowed students to access the materials at a time and location suitable to them. Ahmed found that learning was not impeded by distractions or movement of the learner. It is possible to distribute larger amounts of information to students through tablets such as iPads.

2.3.7   Podcasts

Podcasts are audio recordings of learning materials that are able to be downloaded onto a personal computer or mobile technologies (Marrocco, Wallace Kazer, & Neal-Boylan, 2014). Research regarding the use of podcasts in nursing education is limited, with little consensus around the pedagogical benefits.

One benefit of podcasts is that they allow a student to access the learning at a time and place to suit them (Abate, 2013; Kazlauskas & Robinson, 2012; Marrocco et al., 2014). However, despite this, many students will not access the podcasts, or if they do, use them as an alternative to attending lectures (Kazlauskas & Robinson, 2012). Using podcasts as an alternative to attending lectures may not be to the detriment of their learning. Abate (2013) found with a small sample of nursing students listening to podcasts, as opposed to attending lectures, that podcasts enhanced the students learning. Additionally, it was found that lectures broken into smaller time frames were more beneficial to students than longer podcast lectures. This contrasted with other research where students preferred attending lectures face-to-face because they believed they had better concentration than when listening to podcasts (Kazlauskas & Robinson, 2012). Other research showed mixed results with some students commenting that podcasts created more work for them as they needed to transcribe and re-listen to the podcasts to gain understanding. However, some found that the podcasts were valuable as they could listen to them during long commutes (Marrocco et al., 2014).

Podcasts could also be of benefit to students with learning difficulties. Marrocco and colleagues (2014) found that students with learning difficulties could listen to lectures repeatedly as required until they gained understanding. Other students within the same study found that listening to the podcasts reinforced the learning that had occurred in the classroom.

2.3.8   Apps for education

Mobile applications or 'apps' have brought about a huge change in how users interact with their mobile devices both at work and in their personal time. Apps can be readily introduced into the market without being extensively trialled, making them inexpensive to develop and sell (Johnson et al., 2012). Further, development of apps is generally iterative, and updates occur automatically when the user is connected to the internet. Apps are being developed by universities to enable students to check grades and provide information to prospective students about college life (Johnson et al., 2012). Other apps developed independently of higher education institutions also support students by facilitating interaction with textbooks online (iBooks or Inkling), or for such things as creating mind maps (MindBlowing) for example. There is growing opportunity for students to get assistance for learning through apps, particularly as the students themselves can tailor the apps they use to their own study methods and lifestyle (Johnson et al., 2012).

Nurses use mobile apps frequently in their clinical practice, with pharmacology apps being the most popular (Grabowsky, 2015). Despite the large numbers of apps able to be found for Apple, Android, and Windows devices for health workers, little evidence has been accumulated in regard to their use. Following is a description of one study that has investigated the use of an app in the nursing of dementia patients.

For a nurse to provide person-centred care they need to have an understanding of the person's perspective or worldview. This understanding enables the nurse to then provide care that will support the person psychologically (Maiden et al., 2013). Education to enhance the nurses understanding is demonstrated well in a dementia care unit where staff could interact with a dementia care scenario via an app. The nurses were able to gain knowledge from the app and receive guidance without risk to themselves or to the residents (Maiden et al., 2013). As this research progressed and expanded to another nursing home, it was found that the app had some impact on learning by increasing motivation for different types of care, however, little reflective learning was occurring. The

researchers, therefore, developed a desktop application so staff could meet regularly to reflect on practice (Pitts et al., 2015). This research demonstrated that care needs to be taken with the use of apps and the type of learning that is being undertaken.

More positive results were found in an app for care and prevention of pressure ulcers (Rajpaul, 2015). This app consisted of modules that could be downloaded when the nurse had internet access. The nurse could then access the material without connection to the internet. Assessment was included in the app to enable the nurse to determine knowledge level post completion. Nurses not only completed the modules but found it useful to refer to when wanting to reassure themselves in the care of pressure ulcers. Findings of this research indicate that patient care in relation to pressure ulcers has improved in the nursing homes as a result of this app, with no reported preventable pressure ulcers occurring post introduction (Rajpaul, 2015).

2.3.9   Augmented reality

Augmented reality uses both the virtual and real world in combination to provide an educational experience (Antonioli, Blake, & Sparks, 2014; Bacca, Baldiris, Fabregat, Graf, & Kinshuk, 2014; Chicchi Giglioli, Pallavicini, Pedroli, Serino, & Riva, 2015). This can be achieved through adding information including text, video, or audio, individually or in combination, to a real or virtual situation to enhance the learning experience (Antonioli et al., 2014). Although augmented reality is largely used with mobile devices, it is also used with non-mobile devices (Antonioli et al., 2014). It was found in a systematic review conducted in 2014, that minimal studies have been conducted in relation to the effectiveness of augmented reality and its uses in educational settings. Research that has occurred in augmented reality has mainly occurred in science education, with minimal studies in health and welfare (Bacca et al., 2014). Following is an example of augmented reality in nursing education.

When nurses undertake a procedure for the first time, they are often unsure of how to undertake it and the risk to the patient is, therefore, greater. This risk is

mitigated when students are allowed to practise on a manikin. However, the nurse does not get feedback from a manikin making the experience inferior to that of practice on a human (Wu et al., 2012). Augmented reality potentially closes the gap between knowledge and experience, allowing the student to practice on a manikin, and therefore not have any risk to a person, while also gaining real-time feedback. Although the example reviewed in regard to nursing uses a manikin, with further development, augmented reality could be used in many settings for nursing education.

In a university in Taiwan (Wu et al., 2012) when students approached a manikin with their mobile phone they were given a patient history. When assessing the patient by placing the mobile phone over different areas, they were able to hear lung sounds and gain relevant information dependent on the location of their mobile device. They were able to further interact with the manikin using their mobile device to assess the patient. Through this learning, the students were able to gain feedback on their current level of mastery. This experience enabled the student to improve their problem solving and prioritisation skills. The students had access to numerous attempts at the assessment which is not possible with humans. In comparison to the control group, these students showed improved levels of accuracy and confidence in undertaking the procedure (Wu et al., 2012). Although this was undertaken in a university setting, it has implications for professional learning. Nurses within the work environment could access this type of learning whenever they have the time to practise procedures and assessments. This would, therefore, improve their skills or assist them to learn new skills or procedures.

2.3.10 Nurses' comfort with technologies

As discussed, there are many opportunities to use digital technologies to augment learning in nursing education. However, are nurses ready to accept and adopt these technologies? Do they have the necessary knowledge in using the technologies and access to devices and the internet?

A study in Australia in 2009 found that nurses believed they were in great need of further education in the use of computer technology to be able to carry out

their work (Eley, Fallon, Soar, Buikstra, & Hegney, 2009). Given the fast rise in the use and development of technology within society in recent years, and many more university graduates within the hospital system, it is important to explore if nurses are becoming more proficient in the use of technology. Of particular interest will be if mobile technologies are currently being used for education and if nurses are comfortable in using mobile technologies. Eley and colleagues also raised the issue of the current barriers to education being that nurses do not feel supported to undertake education, and cannot be released from work due to staffing issues (Eley, Fallon, Soar, Buikstra, & Hegney, 2008).

Mobile learning has been developing at a fast rate over the last decade. It is, therefore, important that educators embrace these aspects of mobile learning within professional learning that will most benefit the staff in their areas. Nurses, however, also need to have the knowledge and the internet access to undertake learning using mobile devices. Parry believes that ensuring digital literacy in regard to mobile learning is as important as teaching basic literacy, as it will enable students to use the technology effectively (Parry, 2011). It is important for three reasons, the first being to understand information access, and the speed in which information is able to be accessed. Second, understanding hyper-connectivity is important in the immediacy of information exchange with, for example, Twitter, and how it can be used in an effective way. Lastly, with mobile technologies comes a new sense of space, where information is overlayed over the environment with such things as augmented reality (Parry, 2011).

2.3.11 The introduction of mobile learning

Cochrane (2012) reviewed three mobile learning projects that were considered to have been unsuccessful. From reflecting on these unsuccessful projects, he found that there is a need for students to be part of a mobile learning community of practice prior to beginning the course, as this would ensure students have the knowledge they need to use the devices. Failures also stemmed from the difficulties faced by educators in implementing the mobile

learning. He also discovered that if educators found implementing mobile learning into their courses too difficult, they would return to previous teaching practices, and possibly refuse to participate at all. This highlighted the need for educators to have sufficient professional development and support, to allow them to try new pedagogies and approaches when using mobile devices for learning. He found that limited connectivity and the selection of inappropriate devices created barriers and also hindered acceptance (Cochrane, 2012). This demonstrates the importance of investigating the readiness of students and educators regarding possible issues in introducing mobile learning before it is introduced into a particular environment. The following research focuses on the students' intention to adopt mobile learning.

Students' intention to adopt mobile learning is influenced by many things. Research undertaken in a university in the USA found that students who feel that mobile learning is easy to use are more likely to embrace learning through this medium (Cheon, Lee, Crooks, & Song, 2012). This led the researchers to recommend that when including mobile technologies in courses, educators should ensure that students are comfortable with the mobile learning tasks that are intended to be used. They suggested that more complicated mobile learning tasks should be implemented at a later time when students are comfortable with existing mobile learning tasks (Cheon, Lee, Crooks, & Song, 2012). These findings highlight the importance of this proposed research. The theory developed from this research will inform educators of the current concerns of nurses and how nurses are comfortable with using mobile technologies, thus providing knowledge on how to best introduce mobile learning.

A study was undertaken in the US using perceived self-efficacy measures to determine if nursing students and educators were ready for mobile learning (Kenny, Van Neste-Kenny, Burton, Park, & Qayyum, 2012). The researchers discovered that both groups were ready to learn through mobile applications as generally their perceived self-efficacy in the use of mobile devices was high. It was found that students and educators currently used their mobile devices to teach and learn informally and this is likely to increase (Kenny, Van Neste-Kenny, Burton, Park, & Qayyum, 2012). Mobile devices were used by students

to access professional information where they needed it, at the point of care. Students also believed that mobile technologies could improve communication with educators when they were on clinical placements. However, when asked about their willingness to participate in mobile learning, students were concerned about the potential costs associated with downloading materials. Concerns were also raised about infection control issues with using mobile devices in the clinical setting (Kenny et al., 2012).

Another influence on the acceptance of mobile technologies for learning is likely to be the history of nurse education.

2.4   History of nurse education in Australia and the impact on learning

The first formal training schools for nurses were established in New South Wales (NSW) in 1882. These schools incorporated education into the daily routine of the hospital and were informed by the Nightingale system of nursing, named after Florence Nightingale (NSW Government State Records, 2015). This system of nursing originated from the Nightingale School of Nursing in London and was introduced into Australia in 1868 (Nelson, 2001). The Nightingale system of training was conducted in hospitals as an apprenticeship model under the supervision of the ward sister (now known as a charge nurse). The hands-on training in the ward were supplemented by classes conducted by medical doctors (McDonald, 2010). The nursing job description, in those times, included domestic duties such as cleaning and cooking, and management of the hospital. Nurses had little autonomy regarding their role in those early years, and little influence over what was included in their education (Kako & Rudge, 2008).

Since the introduction of Nightingale nursing, the costs of healthcare have been rising, mainly due to the upskilling of the nursing workforce (Godden & Helmstadter, 2009). This has also been evident in more recent years with nursing education being undertaken within the higher education sector. The transfer to the higher education sector has meant that there are no longer cheap student nurses working within the hospitals, and therefore more expensive registered nurses are required (Godden & Helmstadter, 2009).

Nurse education was controlled and financed by hospital boards which were largely composed of medical doctors. Consequently, the curriculum was largely determined by these doctors and aligned to their priorities rather than being controlled by the nurses themselves. Control changed in the 1960s, with nurses taking responsibility for the nursing curriculum. Nurses determined who would provide their education, therefore reducing the influence of doctors. This gave nurses greater autonomy and more scope to develop the nursing profession (Kako & Rudge, 2008).

As a further progression, regulatory bodies were introduced for each Australian state, to govern the standard of education required for the registered nurse title (NSW Government State Records, 2015). These bodies ensured that both the theoretical and clinical standards met specified minimum requirements. The standards were maintained through the requirement that all nurses sat a state-based exam in order to gain registration. The regulatory agency also kept a register of nurses who were eligible to practise (NSW Government State Records, 2015).

Nursing education transitioned from the hospital system to universities in the 1980's. New South Wales commenced education in the tertiary sector in 1985 with Queensland being the last to make the transition in 1991 (Kako & Rudge, 2008).

Recent changes to nursing registration in Australia have meant that nurses now have a single registration body across the country. In July 2010, the state-based nursing registration boards were replaced by one national registration body, the Nursing and Midwifery Board of Australia (NMBA). The NMBA is supported by the Australian Health Practitioner Regulation Agency (APHRA) (APHRA, 2015; Nursing and Midwifery Board of Australia, 2015b). This agency was setup to oversee and implement various health practitioner boards as one central registration and accreditation agency. The agency includes fourteen health practitioner boards, including the NMBA. As well as being a registration body, the NMBA also sets standards for nurses in Australia (APHRA, 2015; Nursing and Midwifery Board of Australia, 2015b).

2.5 Continuing professional development

Since the introduction of the NMBA, nurses and midwives have needed to demonstrate a minimum of 20 professional development hours per year, directly relevant to their practice to maintain their registration. The optimum number of CPD hours is debated in the literature, as are the issues surrounding the responsibility for costs and time for that education. Other important considerations are what constitutes professional development. Is informal education acceptable and how is this is reported (Heartfield et al., 2013)?

CPD is defined by the Nursing and Midwifery Board of Australia (2015a) as:

> *… the means by which members of the profession maintain, improve and broaden their knowledge, expertise and competence, and develop the personal and professional qualities required throughout their professional lives .*

CPD does not have to be credentialed education and can include many forms of learning including, but not limited to, attending conferences, mandatory learning, service to the profession, short courses or self-directed learning. The nurse, however, will need to provide evidence that learning has occurred (Nursing and Midwifery Board of Australia, 2015a).

2.6 Current Issues

The Australian Health Workforce report (Mason, 2013) predicted that by 2016, there would be once more a shortage of nurses in Australia. This report contrasts with recent reports of new graduates having difficulty in finding employment (Buchan, Twigg, Dussault, Duffield, & Stone, 2015). With the predicted shortage of nurses it is important that nurses do not leave the industry (Mason, 2013). This predicted shortage has implications for nurses' continuing professional development, as staff shortages will mean that nurses will be less likely to be released from work to attend professional development activities.

The Australian Health Workforce report (Mason, 2013) suggested that to retain nurses and midwives, continuing opportunities to enhance their mix of skills need to be provided. In order to achieve this, it is important to allocate time

within their increasingly busy service delivery roles for professional development, with the opportunities this brings for career progression and recognition of expertise (Mason, 2013). The advancement of nursing skills and expansion of the nursing role in Australia, however, has not kept pace with other countries, with medical organisations and lack of government support being blamed (Buchan et al., 2015). This exposes a mismatch between what is being stated in the report and what is currently occurring. The opportunity exists for changes to occur, to reduce barriers and increase the skills of nurses to include advanced practice (Buchan et al., 2015). Nurses with advanced practice could potentially improve services including to the rural and remote population; however, further education would be required.

Continuing professional development is difficult to achieve for some nurses especially in rural areas. The Review of Australian Government Health Workforce Programs has suggested that this is often the result of a lack of flexible delivery methods for CPD activities (Mason, 2013). The government has addressed this to some extent through the Rural Health Channel, which is a free to air television channel through which professional organisations, health associations and government providers broadcast professionally accredited programs (Mason, 2013). The Rural Health Channel, however, cannot be seen as a total solution and needs to be part of a multifaceted approach to improve access to education for those in rural communities. This reinforces the importance of investigating new ways of providing education to nurses that will allow them to undertake continuing education when and where it is needed. There are, however, barriers to nurses engaging in learning.

The cost of continuing learning is a significant barrier to nurses undertaking CPD activities (Haywood, Pain, Ryan, & Adams, 2013). Cost is less of an issue for nurses who receive funding, such as those working in Queensland Health who are funded for learning through their award. Nurses in the private sector contribute to their learning at varying rates, however, they are also more likely to believe they should be sharing the cost with their employer. It has been found that staff will place a greater value on learning when their employer contributes to the cost (Katsikitis et al., 2013).

The amount of personal time spent learning outside of work hours is a barrier to learning for most nurses (Coventry et al., 2015; Katsikitis et al., 2013). Staff shortages and increased workloads are impeding nurses attending professional development in work hours as they are unable to be released from clinical areas (Coventry et al., 2015; Katsikitis et al., 2013). In fact, it is often unlikely that all CPD hours are able to be met within work time, raising the issue of the responsibility for CPD hours. It is generally accepted that some outside time is required to meet CPD requirements, however, this is seen as being difficult for staff with responsibilities outside of work (Haywood et al., 2013).

The difficulties faced in Australia in accessing nurses for education, especially for face-to-face learning are echoed in other countries such as the USA. The USA covers a large geographical area across which organisations are attempting to access staff (Kresevic, Burant, Denton, Health, & Kypriotakis, 2011). The traditional method of face-to-face education is extremely difficult to deliver across large geographical areas, especially when the aim is to deliver the same content to all staff (Kresevic et al., 2011). E-learning including online education or stand-alone education via digital devices is therefore an option to enable all staff to access education at a time and place suitable to them. This then negates the need for staff to take time away from clinical areas. E-learning, however, needs to be one of a range of delivery methods to enable nurses to maintain and increase skills (Ousey & Roberts, 2013).

2.7   Conclusion

Professional development and learning for nurses are greatly influenced by the history of the nursing role and nurse training. With increasing workload and technology, nurses must continue learning and have access to learning that is available to them when and where it is needed. Nurses also have difficulty in attending education that is provided within work hours due to workloads and shift work. The introduction of CPD hours has meant that nurses need to complete twenty hours of learning per year and therefore are looking for ways of completing this. With a predicted nursing shortage, these barriers to continued learning will be exacerbated, requiring innovative ways of providing and engaging with learning materials. Learning via mobile devices has been

shown to be beneficial in education generally, and some research has indicated that it is also valuable in nursing education. There exists, however, a need to determine where mobile devices can be best used in registered nurses' continuing professional development. For mobile learning to be introduced into continuing learning, research needs to be conducted to determine if nurses have the willingness and knowledge needed to use mobile technology. This research, therefore, identifies from registered nurses, what their concerns are in regard to their professional development. The research will focus specifically on the participants' experiences with the use of mobile devices in their personal and professional lives to determine how these technologies will be best leveraged for professional development.

3 Chapter 3 - Methodology

3.1 Introduction

The previous chapter discussed mobile learning in general and in relation to its use in nursing education. It gave the reader an understanding of the history of nursing education, which influences how nurses currently undertake learning in the workplace and the current situation in regard to nurses' postgraduate continuing education.

This chapter will explore the history of grounded theory and the theoretical underpinning of both Glaser and Strauss. As it was these unique experiences of both quantitative and qualitative methodologies, and their mentors, that gave them the knowledge to develop the methodology. The divergence of the methodology will also be discussed along with the merits and disadvantages of following approaches of either Glaser, Strauss and Corbin or Charmaz. Finally, the methodology will be discussed, in relation to the data collection and analysis within this study.

As outlined in the previous chapter, mobile learning has the potential to be used more broadly in nurses' continuing education. However, little research has been conducted that investigates nurses' readiness for mobile learning and how this can be usefully leveraged. As grounded theory is an exploratory methodology that does not depend on the literature to inform the design of the research, it is therefore a suitable methodology for this thesis. Grounded theory was developed in 1965 by Barney Glaser and Aslam Straus while undertaking research in healthcare(Glaser & Strauss, 1965). It is, therefore, ideally suited to investigations focusing on human behaviour. Following this initial research, grounded theory was further developed by the two founders and others, into differing but related methodologies (Heath & Cowley, 2004). Therefore a choice needs to be made as to which variety of grounded theory to follow. Within this chapter, the varieties of grounded theory methodology and their backgrounds will be briefly investigated, and the reasons for choosing to use Glaser's method (CGT) discussed. Glaser's approach to grounded theory will be discussed in depth, including the methods used in this approach.

3.2   Methodology Overview

Grounded theory is an inductive research methodology (Holton, 2008). Grounded theory differs from qualitative methodologies in that it does not seek to accurately describe the area being researched, however conceptualises the data. The aim is to raise above description to conceptualisation and develop a theory. (Holton, 2008). All is data in a grounded theory study, and therefore data can be included from many sources, including both qualitative and quantitative data (Glaser, 1998).

3.3   Why grounded theory?

Grounded theory is a methodology ideally suited to research in areas where little is known, or where a fresh perspective is sought. It gives the researcher an understanding of the problems of the area and the behaviours that are used to solve them (Artinian et al., 2009; Birks & Mills, 2011; Glaser, 1978; Stern, 1980). Little is known about how nurses interact with mobile devices, and although it is likely that mobile learning is valuable in nurse education, it is not known how nurses would best interact with mobile technology for learning. Grounded theory is, therefore, an appropriate methodology to investigate nurses' main concerns regarding the use of mobile technologies for learning and where mobile learning is best placed in continuing nurse education.

Grounded theory is also used widely in health research where the research methodology was first developed by sociologists Glaser and Strauss (1967). Although grounded theory has its origins in sociology, nurses have adopted the methodology to develop theories regarding both patient and nursing concerns. Artinian and colleagues (2009) state that "the grounded theory method can be used to study any type of problem that involves the discovery of a patient or nurse concern" (p. 8). Indeed there is much writing regarding the use of grounded theory in nursing research including the authors cited in this thesis Artinian (2009), Giske and Corne, Stern (1980, 2007), and Birks and Mills (2011), to name a few. This strong use of the methodology within the field of nursing also gave rise to my intent to use the methodology, and my belief that by using grounded theory I would be able to identify the participants' issues and behaviours I sought to understand.

The use of unstructured interviews in grounded theory allows the participant to voice their concerns, and the researcher is, therefore, able to identify what the main issues

are in the area under consideration (Glaser, 1978). This allows the individual's experiences and experience of the world to be captured (Hallburg, 2006). This fits ideally with this research as it is the individual's experience and beliefs that will direct how professional education in nursing should be directed and how mobile learning fits within the nurses' current behaviours. My interest in this area has been brought about by my recent experience as a nurse educator.

In the last ten years, I have worked in research and nurse education roles within the hospital system. While introducing new equipment and procedures, I have observed that there are many factors contributing to a nurse's acceptance and subsequent use of new technologies and methods. It was, therefore, important to investigate what these factors were, specifically from the nurses' point of view, to determine how mobile learning would be best introduced into nurses' continuing learning, and the circumstances under which it is best used.

Because I have this background in nurse education, I needed to be aware that I might hold preconceptions about the participants' issues which risked constraining data collection and risked imposing my beliefs on the data. It was, therefore, important that this was considered when determining a methodology for this research. When following a grounded theory approach, interview questions are designed to allow the participants to guide discussion; and analysis of the data requires the recognition of recurring behaviours that resolve or process the concerns of participants (Glaser, 1978). Proper data collection techniques and a systematic analysis of the data assists in minimising bias from the researcher. As the researcher's data are included as only one other voice within the research, it will not influence patterns of behaviour. In this research, my personal biases were noted and therefore became part of the data, as will be discussed later in the chapter. It is inevitable that the expectations of health care professionals and the culture of nursing will change over time as will the affordances of mobile technologies. Grounded theory methodology allows the theory to be continually reviewed through constant comparison as new data come to hand (Glaser, 1998), therefore allowing the research to be developed into the future as technology changes (Glaser, 1978). This capacity of grounded theory to adapt will mean that this research can also remain relevant through the future collection and analysis of new data.

Therefore, in considering methodologies for this research, grounded theory was the most appropriate as it is an exploratory methodology and therefore an ideal research tool for areas where little is known. It is the participant who leads the direction of the research, not the researcher, and therefore it is more likely that the concerns of the participants are identified. The theory is able to grow and change as data are added over time, meaning the relevance of the theory can be maintained.

3.4   History of Grounded Theory

Glaser and Strauss worked together at the University of California to research death and dying. It was in conducting this research that the two men collaborated using their differing backgrounds to develop grounded theory (Artinian et al., 2009; Strauss & Corbin, 1990). Strauss completed his advanced degrees at the University of Chicago. The University had a long tradition of using qualitative methods for undertaking research and therefore Strauss was strongly influenced by this (Locke, 1996; Strauss & Corbin, 1998). Glaser, however, came from a very different tradition.

Glaser came from the strong quantitative background of Columbia University where he completed his PhD. In the period Glaser was at Columbia, the field of sociology was trying to gain recognition in science and was, therefore, using quantitative methods (Holton, 2011). At the time, qualitative methods were used mainly to inform the development of the quantitative studies (Glaser, 1998). While Glaser was attending Columbia new ideas were emerging in relation to conducting research, and students were encouraged to construct theory (Holton, 2011).

Glaser was influenced greatly by the work of the sociologist Paul Lazarsfield. Lazarsfield discovered the interchangeability of indices. Glaser used this notion to indicate saturation of concepts; such that once a researcher is getting the same information over and over, further investigation is not warranted as the concept is now saturated. Once a concept is saturated, the next incident could be swapped for any of the existing indices within that concept, and the conceptualisation would remain unchanged. Thus saturation is achieved in a study when further data no longer add any different information to a particular area (Glaser, 1998). Lazarsfield

did not view data as entirely qualitative or quantitative, and this resonated with Glaser, as he believed the elements of each should be explored fully (Glaser, 1998).

At the same time, Glaser was studying theory construction from another of his influences Robert Merton. Glaser learnt theoretical coding from Merton. He taught his students to read looking for hypotheses, concepts and problems. Merton's teachings gave Glaser three basic things. It gave him good abstract training and a belief that theory needs to be grounded in the data and led him to ensure that fit, work, and relevance, are part of the research product (Glaser, 1998).

After completing his PhD, Glaser was hired by Anselm Strauss to work on a research grant at the University of California. From here their collaboration began, towards developing Grounded theory, as they combined their backgrounds in researching dying in hospitals (Glaser & Strauss, 1965). At the time, "The Discovery of Grounded Theory"(Glaser & Strauss, 1967) was written, it was one of few method books available, as qualitative research had previously been taught through mentoring and oral means. The book was at the forefront of the qualitative revolution and put forward qualitative research as a valid approach to inquiry (Charmaz, 2000; Hallburg, 2006).

After deciding to use grounded theory, the researcher needs to determine which of the grounded theory authors to follow. In navigating this decision, the researcher must have an awareness of the three main branches of the methodology. These are those theories espoused by Glaser, Strauss and Corbin, and Charmaz. Glaser does not view Strauss and Corbin's or Charmaz' approach as Grounded theory, but as other qualitative methods (Glaser, 1992., Glaser, 2002). However, wider opinion discusses these three branches as all being grounded theory methodology, with different approaches to undertaking the methods with the methodology. Therefore within this thesis, when discussing the grounded theory as a whole it will be termed a methodology, and in discussion of the different approaches they will individually be termed a grounded theory method.

3.5 Differences between Glaser's (Classic) grounded theory and Strauss and Corbin's methodology

As Glaser and Strauss' careers progressed, their use and further development of grounded theory diverged. Glaser extended grounded theory through more explanation of theoretical sampling, theoretical coding and theoretical memos. However, he maintained the methodology as it was originally developed (Heath & Cowley, 2004., Simmons, 2012). Strauss and Corbin further developed the analytic techniques of grounded theory (Heath & Cowley, 2004). It is these changes that Glaser believes have caused Strauss and Corbin's approach to differ from the original methodology, resulting in forcing of the data, and preconceived conceptual description (Glaser, 1992).

The differences first became apparent in Glaser's book *Basics of Grounded Theory Analysis* (Glaser, 1992). This book served as a rebuttal to the book *Basics of Qualitative Research* by Strauss and Corbin (1998). Glaser believes that using the method of Strauss and Corbin changes grounded theory from a theory generating method into a method of full conceptual description. He also believes that the categories are forced on the data rather than emerging from the data (Glaser, 1992; Hallburg, 2006). However, Strauss maintained they use the same basic procedures, although there are some procedural differences in the methods and some differing terminology (Locke, 1996; Strauss & Corbin, 1990).

Strauss and Corbin provided a far more structured approach to analysis describing three types of coding: open, axial, and selective, which appeals to many people (Cooney, 2010). However, those who adhere to Glaser's techniques believe that Glaser's approach produces a theory that is more completely grounded in the data (Simmons, 2012). Glaser and Strauss and Corbin use the same definition of theoretical sampling, however, undertake theoretical sampling differently. This is one of the main differences between their interpretations of the grounded theory methodology. In elaborating on theoretical sampling, Strauss and Corbin developed a step-by-step process in theory development. Their method moves from the initial open coding where any participant within the substantive area is interviewed to relational and variational sampling that occurs with axial coding where participants are chosen to further develop the dimensions and properties of categories. The

process then moves onto discriminate sampling when selective coding is occurring. At this stage, the sampling is very selective, looking for data that will assist with comparative analysis (Strauss & Corbin, 1998). It is the view of some that this simplifies the research process, however, others, Glaser included, believe that this makes the process too rigid by not allowing for the fluid nature of the emergence of categories and the development of theory. Glaser also believes that by following this process, creativity is stifled and conceptualisation limited (Glaser, 1998).

Differences also exist in how Glaser and, Strauss and Corbin view the end product of grounded theory research. Glaser views the generated theory as something that can be further tested and developed in future situations and environments. Strauss and Corbin, however, believed that the theory is produced and tested within the research and therefore can be applied to future situations without alteration (Hallburg, 2006; Locke, 1996).

Locke (1996) suggested that the debate between Glaser and Strauss is complicated in that "issues about method are tangled with issues about friendship, loyalty, and intellectual ownership" (p. 241). Despite these differences, it is worth noting that Glaser and Strauss remained friends and had conversations to within days of Strauss' death (Glaser, 1998).

Apart from the founders' versions of the methodology, there are numerous other variations. The most prominent of these was conceived by Charmaz. Charmaz first undertook grounded theory mentored by Glaser. However, she has since altered the theory, taking a more constructivist approach compared to that of Glaser and Strauss, who she claims are objectivist. It is argued by Simmons (2012) that Charmaz' approach forces the data by forming concepts straight from the data and in interviewing using preconceived questions.

3.6   Charmaz' constructivist grounded theory

Charmaz argues that grounded theory should focus on meaning, action, and process in the studied social context. The result of a constructivist grounded theory study is more seldom presented as a theory than as a story or a narrative, including categories, told by the researcher, with a focus on the understanding of social

processes. Charmaz states that the researcher's analysis tells a story about people, social processes, and situations (Hallburg, 2006).

Glaser disagrees with the views of Charmaz and believes that she has changed grounded theory to the point where it is just another qualitative method and not grounded theory. He has stated that the outcomes of the research conducted by Charmaz are descriptive rather than having the outcome of a theory (Artinian et al., 2009). This comes from Glaser's view that the categories will emerge from the data without interference from the researcher. The researcher facilitates the participant to discuss what is important to them. This is not necessarily the view of how it actually is, but it is the view the participant believes they need to portray to the researcher. Through comparison with other interviews, it will become apparent if this view is the same as those of other participants, and will become part of the theory (Glaser, 1998). Outlying views, or the researcher's personal views, are negated as the research is continued, as these views are not repeated in the data and therefore do not form part of the pattern of behaviours (Glaser, 1998).

3.7   Choosing between grounded theorists

In researching the different methods of undertaking grounded theory, it was found that all methods have their strengths and weaknesses for differing purposes, and therefore are appropriate for different types of research and researchers. Being a novice researcher, I wanted to choose one method and undertake this method as closely as possible. Glaser's approach was undertaken for various reasons, that will be discussed below.

I wanted to develop a theory that could be used to inform organisations as to where mobile learning could be best used in continuing nurse education. Therefore through my investigations, I believed that Glaser's approach was more likely to end with a theory, rather than being descriptive. The theory was also more likely to come from the data and therefore more likely to meet the objectives of this study. (Glaser, 1998; Heath & Cowley, 2004)

Stauss and Corbin's approach is more regimented in the analysis process than Glaser's (Cooney, 2010; Heath & Cowley, 2004). I was attracted to the more naturalistic way of allowing the concepts to emerge from the data, without placing

possibly restrictive analytic methods on them. This best suits my cognitive style, as I believe it is the participants who are best situated to identify what is important. Health and Cowley give advice that the novice researcher should choose the grounded theory method that best suits their cognitive style and that their analytical skills should be developed through doing the research (Heath & Cowley, 2004).

Qualitative researchers place their research within specific paradigms in which to frame their research design. Grounded theory, however, is not a qualitative method and therefore does not sit within a qualitative paradigm (Holton, 2008). Within the literature, there is much confusion as researchers attempt to place it within a specific paradigm, and in doing so often changed the methods of undertaking the methodology (Holton, 2008). When personally discussing this with Barney Glaser in Sweden (personal communication, April 10, 2014) his comment was "It is what it is, so why does it matter". Therefore Glaser's approach to grounded theory as a generalist methodology was appropriate to the cognitive style of this researcher and their belief that there are multiple truths and multiple ways people view the world. Benefit is therefore gained from reviewing a research area from multiple perspectives within the research method.

There is great debate regarding the use and perceived misuse of grounded theory. Locke (1996) stated that "when we thinly miswrite a research method and tradition that has stood up for more than 25 years and made important contributions to the field of organization studies only to invoke its authority, we are rewriting it into a superficial and hollow stamp of approval" (p. 244). It, therefore, seemed logical to choose Glaser's approach, and learn the methodology through doing, before attempting to make contributions to grounded theory methodology or follow other methods.

3.8   Glaser's (classic) grounded theory

3.8.1   Minus mentoring

Glaser asserts in many of his writings that a grounded theory is better conducted with a mentor who has used the methodology. Phyllis Stern coined the phrase "minus mentoring" which is used to describe researchers who are learning the methodology alone, from books. Minus mentoring often happens with the PhD

candidate who undertakes grounded theory, without a supervisor who is experienced with the methodology. It is thought that this increases the possibility of the student misinterpreting the methodology (Glaser, 1998). Since I was undertaking grounded theory without supervisors experienced in the methodology, I searched for experienced grounded theorists who undertook the methodology using Glaser's approach to mentor me. Grounded theory online was discovered and expertise sought from Helen Scott (http://www.groundedtheoryonline.com/), who has extensive experience with this methodology in learning contexts. Scott's experience has been gained through attending numerous seminars conducted by Barney Glaser since 2003, undertaking grounded theory studies and mentoring students. She has been leading seminars since 2008. Scott acted as a sounding board and mentor around the use of the methodology. Initial sessions with this mentor were conducted using Skype as she was located in the UK, to give an understanding of the methodology and guide the development of the proposed methods. The remaining sessions were spaced throughout the research and ensured consistency with grounded theory methodology using Glaser's approach. These sessions were also used to troubleshoot with analysis as the research progressed.

Towards the end of data collection, I attended a grounded theory workshop in Sweden conducted by Barney Glaser, which was attended by numerous experienced grounded theory researchers. This workshop was held to increase the participants' knowledge of grounded theory through working through the research projects of fellow participants. The workshop also gave the participants the opportunity to present their personal research. The aim of presenting work was, with the advice of the group, to advance to the next stage in your research. This workshop will be discussed further, later in the chapter. I also attended another workshop in Brisbane, Australia conducted by Tom Andrews, who has vast experience with the grounded theory methodology, while I was at the stage of raising the conceptual level of the study.

3.8.2   Sampling

In commencing grounded theory research, the researcher must define the substantive area they will be studying. The defined group of participants will depend on the

monetary and time restraints of the researcher. However, the narrower the group, the less variance will be found between them. The defined group will also depend on the purpose of the research. Having multiple groups to compare allows the research to have greater credibility as the differences and similarities are documented (Glaser & Strauss, 1967). The sample size is not predetermined in grounded theory. The sample size is instead dependent on the problems raised, the variability within those problems, and is finalised only when saturation is reached for each category after the theory emerges and theoretical sampling has occurred (Artinian et al., 2009).

In this study, the substantive group is registered nurses in Australia. A registered nurse is someone who holds a qualification in nursing that allows them to register as a registered nurse with APHRA. Currently it is a degree qualification, however, has transitioned from a certificate qualification during the 1980s and also includes diploma qualifications, and other overseas qualifications deemed as equivalent. Within this group there were sub-groups that could be differentiated by speciality, location, and type of organisation as well as other variables. More specialised groups could have been used in this research; however, this would have limited the outcomes of the research to being applicable only to that group. If smaller groups had been used, outcomes would not have been practically applicable to the introduction of mobile learning to postgraduate nurses as a whole. Given that this research has only been carried out in Australia, it is considered, at this point in time, to be representative only of Australian nurses. It could, however, be further sampled in other countries at a later date.

It is important to determine an initial sample where the relevant data are most likely to occur. The data obtained from these groups, will then indicate where the researcher should sample further (Coyne, 1997). Pre-existing knowledge of the area to be researched can inform the researcher about where to start and indeed the sorts of groups that may need to be included. This pre-existing knowledge should be given no credence, however, until it earns its way into the research through constant comparison with further data. These data will be validated or dismissed, after the data analysis yields theoretical concepts and the purposeful selection of participants is validated, or conversely the sample is dismissed as not important to the theory (Breckenridge & Jones, 2009). Some prior knowledge is also important to ensure the

generalisability of the research, as the researcher will have a basic idea of the types of groups the research should be conducted with. The research can then be taken further into a larger range of groups in later research (Glaser & Strauss, 1967).

This research was conducted across a variety of geographical settings including metropolitan, rural and remote, and multiple states, in the private and public sectors. Both male and female registered nurses were included and were at various stages of their careers and of differing ages. Differences in responses were not noted in all of these groups, and therefore these groups were not explored further with theoretical sampling. For example, the state a nurse belonged to did not alter their data, however, the amount of time since graduation did. Therefore, location was not theoretically sampled, but, time since graduation was. It was important to consider these different groups in order for the theory to be generalisable to nurses in Australia.

Ethical approval needs to be gained for any research that involves people to ensure that the participants will not be harmed or disadvantaged by the research. The sample needs to be determined prior to ethics approval being sought. A broad substantive area was determined for this research prior to seeking ethics approval.

3.8.3   Ethics approval

As it was the aim to include a broad range of nurses in the sample, ethics approval was sought to include nurses from metropolitan and rural areas and public and private systems. Ethics approval was received from the University of Southern Queensland (Appendix A), St Vincent's Health and Aged Care (a company of the St Vincent's Health Australia Group) including St Vincent's Toowoomba, Holy Spirit North side and St Vincent's Brisbane (Appendix B). Ethics approval was also sought from Queensland Health, for multisite research (Appendix C). Hospitals included in the Queensland Health application were Hervey Bay, Darling Downs District, Prince Charles and Royal Brisbane hospitals.

Multi-site ethics approval was sought from the Prince Charles Hospital. Queensland Health also required a further step where application is made to each individual hospital for governance approval. This step was prohibitive in some Queensland

hospitals where a staff member from within the hospital needed to apply for the research approval. Therefore, these hospitals were not pursued in the initial research and were not needed as saturation was reached without needing to extend to these hospitals.

Ethics approval was also sought from St Vincent's private hospitals. These hospitals cover a broad geographical area, including metropolitan and regional hospitals in Queensland. Emerging data dictated how many hospitals were used for data collection and the locations of the hospitals.

3.8.4   Population/sampling within this research

The substantive population being researched were postgraduate registered nurses, therefore, the population researched were people who identified themselves as being registered nurses. A total of twenty seven registered nurses were included in the research. They were either known to the researcher, working at a hospital where the research had ethics approval, were employed in some capacity at the University of Southern Queensland, or were undertaking postgraduate studies at the university.

In determining the purposeful sample, a wide variety of post-registration nurses were included. In Australia in 2011, 90 % of post-registration nurses were female (Australian Bureau of Statistics, 2013). Therefore, as expected, there is a much larger proportion of female (24) compared to male (4) participants in this research. The participants of the research included post-registration nurses from private (13) and public hospitals (6) in metropolitan (9), regional (13), rural (3) and remote (2) areas in Queensland (23), New South Wales (1) Victoria (1), South Australia (1) and the Northern Territory (1). Participants were from Acute Hospitals, primary care (4) and long-term aged care (1). There was a large diversity of ages and nursing experience within the study including new graduates and clinical nurses with many years' experience and postgraduate qualifications. Participants were also sought from a variety of specialist and generalist areas to widen the substantive group. The initial sample was chosen to give a broad cross section of post-registration nurses. It was not presumed that any group would be different from another; however, the aim was to include diverse groups at the beginning of the study, and let the data determine if any groups would need further exploration. The data collected from the participants

determined within which group theoretical sampling would occur as will be discussed further within this chapter.

3.8.5   Recruitment methods

Participants were recruited initially from hospitals operated by Queensland Health and St Vincent's Health and Aged Care. Recruiting through these organisations ensured the sample was broad, encompassing post-registration nurses from large metropolitan hospitals, smaller metropolitan hospitals, regional hospitals and rural hospitals in Queensland. Access to other post-registration nurses in different organisations and states were also accessed through postgraduate nursing programs at the University of Southern Queensland. Participants were also recruited through word of mouth, under ethics approval obtained through the University of Southern Queensland.

Permission was sought from individual hospitals to advertise either through flyers (Appendix D) for participants to attend an interview or by other means suitable to the hospital. Therefore the methods of advertising in hospitals varied. One hospital allowed me to speak directly to the nurse unit managers as a group and explain the research. The individual managers then introduced me to staff and allowed staff to be released from the work area, to be interviewed at that time. Eight interviews were conducted in this hospital. Other hospitals allowed me to visit the nurse unit managers in their units and promote the research, with a mixture of leaving flyers and interviewing staff at that time. One hospital particularly stated that staff were not to be interviewed during work time. At this hospital, interviews were organised as the researcher visited the units, and were conducted at a later time suitable to the participant. Flyers were also left for staff to contact the researcher. Diversity of participants was gained through leaving a message in the online study area of a post-graduate course at USQ. This message gained the researcher a number of participants from a variety of states outside of Queensland. One interview was also conducted through the CRN project, to which my study is attached, with a nurse attending the University of South Australia. Two personal contacts were also interviewed. Interviews were held using Skype, FaceTime, phone and face-to-face depending on what was most convenient for the participant.

3.8.6   Consent

Before the interview commenced, the participant was asked to read a plain language statement and to sign a consent form (Appendix E). When the interview was conducted via Skype or phone, the participant was asked to reply via email: 'I have read the participant information sheet and consent form and agree to participate in an interview', or to scan and return the signed consent form. The plain language statement explained to the participant why the study was being conducted and what would be asked of them. They were advised that they could cease the interview at any time. They were also advised that any information shared with the researcher would be included in the study. Their confidentiality was guaranteed.

3.8.7   Interviews

Interviews in classic grounded theory are conducted around a specific area (substantive area) and the important issues, as identified by the participants, will arise in interviews. Often the interview will commence using very general conversation which aims at making the participant feel comfortable. The participant will then be asked a very broad question to open discussion in the area to be researched. Subsequent questions are dependent on what the participant has said previously. As the research progresses, more specific questions can be introduced (Simmons, 2012). Approaching the research in this way enables the true issues to arise, not questions from the researcher's preconceived ideas (Glaser, 1998).

A main concept in classic grounded theory is that the researcher allows the data to emerge and induces its meaning even if it is not what the researcher was expecting or wanting (Glaser, 1998). This is evident in this research, where what has been found is entirely relevant to the introduction of mobile learning, however, it is focused around how the nurses allocate their personal resources to learning. I did not anticipate personal resourcing to be relevant to mobile learning prior to this study, and therefore it would not have been discovered unless methods were used to allow the participants to lead the topics for discussion.

One of the attributes of grounded theory is that all is data, meaning that data could be taken from many types of sources from the substantive area including but not limited

to interviews, existing data from previous projects, and casual conversations (Glaser, 1998; Holton 2008; Stern, 1980). Interviews can be held online synchronously, where the researcher and participant meet online by using for example 'Skype' or 'Google Hangouts' or may be held asynchronously through, for example, email or Facebook (Scott, 2012).

The main issue when conducting interviews online is to ensure that both parties are comfortable with the communication method being used. This is in regard to both the technology and the environment to which the participant is being interviewed (Scott, 2012). There needs to be a place, whether the interview is being conducted in person, via Skype or by phone, that the participant will not be interrupted during the interview. The participant needs to be familiar with using the technology or find the technology intuitive to use, enabling them to feel comfortable with the interview process. Safety of the participant is also a major concern as the participant needs to feel comfortable with sharing information over the internet (Scott, 2012). Some people will not feel comfortable with this no matter what, however, it is the responsibility of the interviewer that the research be conducted in an ethical way and that the participant is fully informed of how the interview will be conducted and the security of the method of communication. Audio visual interviews have the advantage of nonverbal cues being able to be seen by both the participant and the interviewer. Interviews can be conducted over the Internet with one or more people participating (Scott, 2012).

Interviews conducted asynchronously have an advantage especially for busy people who do not have the time to allocate to a face-to-face interview. Asynchronous interviews can be conducted using various formats including email, wikis, Facebook, or many more methods that are emerging (Scott, 2012). A blog was used in this research, however, only one comment was received and it was not related to the research. Consequently the blog data were not included in the study. The data were collected in this research using interviews conducted face-to-face or via Skype, FaceTime, or phone.

Initially, the interviews were unstructured with only a few broad questions, allowing the participant to determine what was important in regard to their use of mobile

devices (Appendix F). These interviews commenced with a general discussion and then the participant was asked if they owned any mobile technologies and if they did what they used it for. They were also asked what their thoughts were regarding mobile learning.

It became apparent in the initial interviews that what type of learning they were acquiring from their mobile device was also important. Therefore, as the interviews progressed and theoretical sampling commenced, questions around continuing education in general, such as what prompted them to seek education, what methods of education they had available to them and why they chose one method over another, were also important to participants.

Initial participants, also spoke about their educator providing them with various links to online education. Therefore, further information regarding online links were sought from the participants. As the interviewing process progressed, the interviews became more structured in order to be able to compare each participant's concerns, to the concepts that were generated from the previous interviews. Reflective listening was used to ensure understanding was gained from what the participant had said. Probing questions were used to further investigate concerns the participant had raised.

3.8.7.1 To record or not?

Recording interviews slows down the research process and inhibits the ability of the researcher to constantly compare findings as interviews are conducted (Glaser, 1998). It is a possibility, that if interviews are recorded, the researcher will become overwhelmed by too much information rather than focusing on the main concepts, therefore, risking development of a rich description rather than a theory (Holton, 2010, 2011; Stern, 2007). Instead, Glaser used field notes written after the interview, and analysis then occurs directly after writing the notes (Glaser, 1998). Fieldnotes are, therefore, an important consideration when using grounded theory, as analysis occurs at the same time as data are being collected.

Recording of interviews can be inhibitive of the interview process itself. Researchers have found that if an interview is recorded or notes taken during an interview, the participant may not be as open and may not share their true issues (Glaser, 1998).

Artinian echoes Glaser's beliefs about recording of interviews. She has found in interviews that participants share more personal information when not being recorded, and therefore not recording contributed to the relationship building process (Artinian et al., 2009). Some participants are also so inhibited by the thought of being recorded that they refuse to be interviewed (Al-Yateem, 2012). There are, however, varying views within the grounded theory community in regard to recording interviews.

Some supervisors, have found recording to be useful with students undertaking grounded theory (Artinian et al., 2009; Birks & Mills, 2011). Students will listen to the interviews a number of times prior to transcription and often pick up themes not evident when they were undertaking the interviews (Artinian et al., 2009). Recording is also thought to be valuable in retaining data, even if it is not used for analysis (Birks & Mills, 2011). Other researchers take brief notes during interviews and then write field notes after the interview. Scott (2012) uses this approach and believes that the timing of note taking is something for the researcher and the participant to decide. They believe that taking notes during the interview tends to relax the participant, as when they pause there is an easy silence as the researcher writes to catch-up (Scott, 2012).

Scott's (2012) approach to taking notes was followed in this research, with notes taken during the interview. I explained to the participant that notes would be taken during the interview. The pauses needed to allow me to write my notes often ended with the participant reflecting on their comments and adding more detail. It also gave me a chance to pause during the interview and ask further questions about what the participant had said. The notes were further expanded as field notes after the interview was completed, adding the extra perspective that would be required at a later date when reviewing the notes.

Not recording interviews was a new experience for me as I had recorded interviews in previous studies. The first interview was recorded (with the permission of the participant) and notes also taken. It was found through this interview that all relevant information was captured in the notes, and therefore, I felt confident in not recording

subsequent interviews. Taking notes in place of recording and transcribing interviews is timesaving without the loss of valuable data (Glaser, 1998).

When comparing both methods, I found that by not recording I was able to determine, with greater efficiency, what the key points of the interviews were without poring over data that were not relevant to the research. I have also found none of the angst from participants I had previously experienced when recording interviews. In previous recorded interviews, participants were concerned that the information was 'on the record'. When interviewing without recording, I found it more like a conversation and participants were more candid with their information. Memos were also written after the interviews.

3.8.8   Analysis

Grounded theory differs to other methodologies in that data collection, coding and analysis occur simultaneously (Glaser & Strauss, 1967). Analysis in grounded theory occurs on four levels and becomes more conceptualised at each level. The first level is the data itself. The second level is the level at which incident to incident, and incident to concept are compared in order to emerge categories and their properties. These concepts name the patterns in the data. Theoretical sampling (data collection), and selective coding are then carried out until all the concepts are saturated. At each stage of the analysis, the researcher is identifying what further groups should be turned to for data collection, and which questions to ask. Memoing continues to raise the conceptual level throughout the research until the third level, where the memos are sorted, and the concepts are integrated into a substantive theory. The fourth level develops the substantive theory into a formal theory, as it is compared to the literature and becomes more conceptually generalised (Glaser, 1998; Glaser & Strauss, 1967). The terms relating to analysis will now be defined and discussed in depth.

3.8.8.1   *Memoing*
Memoing is critical to the grounded theory methodology and is carried out in all its forms. Memoing is discussed first in discussing analysis, as it occurs throughout the research process, and is a method of capturing the ideas of the researcher about concepts and their relationships to other concepts as they arise. These ideas are

grounded in that they are sparked by the data (Stern, 1980). The memos are free form writing that is meant only for the researcher to see and their purpose is to capture the moment and the thoughts, within that moment They can take any form and can be as little as a sentence or as long as five pages or even more. As the process of theory development is dense with thoughts, it is not possible to retain all thoughts in a person's memory. It is, therefore, important to capture them at the time of their occurrence (Charmaz, 2006; Glaser, 1998).

Memos capture the conceptual ideas of the researcher as a hypothesis, and therefore allow the researcher to find the relationships between the codes, and consequently raise the conceptual level of the research. Memos continue to help the researcher to raise the conceptualisation further, in realising the relationships between the codes. They also help the researcher to determine when saturation occurs as well as direct the researcher with theoretical sampling (Charmaz, 2006; Glaser, 1998; Holton, 2008, 2010). In the final stages of the research, memos are sorted. Sorting of memos is a valuable step and assists in the writing up of the project (Stern, 1980). Sorting will be discussed further later in the chapter.

Memoing was found to be of great benefit in this research as it allowed me to not dwell on any issues, instead documenting them and moving on. This allowed me to revisit ideas at a later stage and assisted in raising the conceptualisation. Memoing was completed throughout the research using the Evernote app on an iPad. Memoing in this way meant that I was able to always have access to my 'note pad' as it was kept with me at all times. Like the nurses in my study, I often used quiet times in waiting rooms or when driving or exercising to deliberate what was happening in the research. When ideas came to me, I would stop and enter the thoughts into my iPad. Memoing also occurred while I was coding the data, comparing incident to incident. The memos included ideas that might enable me to group data together or ideas about what a group of data actually meant in regard to the behaviour of the participants, or how different concepts related to each other. When theoretically sampling, memos also included ideas for further questions that could be asked of the participants or what type of participant the data needed to be collected from. Memoing continued into the sorting process, however, at this time, the Evernote memos were printed out, and further memos were written in paper form as well as

using the Evernote app when I was physically away from my analysis. The following is an example of a memo that assisted in determining the important concerns in the area.

> *Wanting knowledge has something to do with fitting and localised best practice. They need enough knowledge to meet expectations in their workplace. It's meeting expectations is main concern for less experienced nurses. Senior nurses drive what the expectations are. Expectations may not be best practice. But might be localised best practice. Senior nurses also need to meet expectations might be their own or what the needs are of patients*

The above memo was from early in the research and shows the main concern beginning to appear. It also shows some confusion, which is normal within a grounded theory study as the categories emerge (Glaser, 1998).

3.8.8.2   *Coding*

Codes give a name to the participants' actions in the area being studied. The codes can mirror what the participants are saying or can be applied by the researcher (Artinian et al., 2009). From these initial descriptive codes, categories and their properties will develop that relate the codes in clusters due to a commonality (Artinian et al., 2009). This is accomplished by the many rigorous steps of grounded theory woven together by the constant comparison process, which is designed to generate concepts from all data. Most frequently, qualitative data are used, however, quantitative data are also able to inform grounded theory research (Artinian et al., 2009; Glaser, 1998). Coding in grounded theory is not a discrete stage of the research process but is continuous due to the analytic nature of the methodology. However, throughout the process, the researcher codes in various ways depending on the stage of the research. In substantive coding, which relates directly with the data, there are two types of coding, open coding and then after the core category emerges (the core category will be discussed later in the chapter), selective coding (Artinian et al., 2009; Holton, 2010). Initially, the researcher commences with open coding.

After each interview, the field notes from the interview were analysed line by line, incident by incident and coded. It is therefore not the overall impression from the

interview that is analysed. Instead each piece of information, each incident, is viewed separately (Glaser, 1998; Stern, 1980). The researcher starts by comparing incidents, and as they do this, they constantly ask, "what category does this incident indicate, or what property of what category does this incident indicate? And lastly what is the participants' main concern" (Glaser, 1998, p. 140)?

From the initial coding, categories emerge that group these codes together; the next incidents are then compared to that category to form the properties of the category. Analysis is completed for each interview and then compared to categories and their properties from previous interviews. This process is termed the constant comparison method. Using this method allows the researcher to analyse the interviews, repeatedly comparing the growing knowledge of each area and going back over data to ensure accuracy in the patterns emerging (Glaser, 1998). An example of this is in Glaser and Strauss' research on death and dying, where they found caring of families to be important. However, they did not discover this until towards the end of their research. They could then recognised the same category in their previous interviews. This category could then be explored further in future interviews. Using this method allows the participants' main concerns to be determined as the categories and their properties come from the data (Glaser, 1998).

The process of line-by-line analysis was difficult in the beginning of the process, as I had previous experience with qualitative analysis and kept slipping back to picking meaning as it occurred. Although this is similar to grounded theory, I found the grounded theory approach of looking at each incident and gaining meaning from it far more rigorous. The concept of line-by-line analysis was made clearer to me at the grounded theory trouble shooting workshop when it was discussed as analysing idea by idea. Analysising idea by idea made sense and allowed me to better understand the process. Through literally coding line-by-line it is very easy to over-fracture the data and end up with a multitude of codes.

This process of idea by idea analysis can result in a researcher inexperienced in grounded theory, having numerous sometimes descriptive and also repetitive codes. As the researcher gains competence with the method and memos, many of these codes are able to be integrated, and fewer more conceptual codes developed (Holton,

2010). The initial codes within this research were numerous; however, it was found that many of the codes could be integrated as my experience with the method grew, and through memoing, the higher level concepts emerged. Mentoring from Grounded Theory Online, and by attending a grounded theory workshop with Barney Glaser assisted with me gaining confidence with the coding process.

Through the constant comparative method and memoing, the core category was recognised. The core category accounts for most of the variance within the substantive area, relates the categories and their properties and will organise the theory (Glaser, 1998). The core category is how the main concern of the area is resolved and is meaningful to the area being studied (Holton, 2010). The core category of this research is Economising Learning, as will be discussed further below.

Selective coding occurs alongside theoretical sampling once the core category has become apparent within the research. Selective coding delimits the research through, from this point, not including some codes which do not relate to the core category or explain the behaviour of the area. Instead, the researcher focuses on developing, through further data collection, the codes that relate to the core category (Holton, 2010). One such code in this research was infection control, where many nurses were worried about the infection risk of having a mobile device in the workplace. This is an important issue, however, did not, as most other codes, explain the behaviour in Economising Learning.

The categories, which are alternatively named concepts, were formed as the research progressed. As each interview was compared to codes developed from previous interviews, and memos were written regarding relationships of codes, categories became evident. As more data were collected, analysis of this data further developed the categories and their properties.

AThe categories and their properties were developed to a leval at about interview 20, where if doing another type of qualitative methodology, the research area could be fully described. This, however, is not what grounded theory is, and further sampling and analyse were needed to fully understand the main concern of the nurses being interviewed, and develop a theory that explains how they were resolving their main

concern. The main concern of the nurses kept eluding me, even though in retrospect it was very evident. Eventually, I felt that maintaining competence with limited resources was, in fact, their main concern. My memos kept coming up with things like 'tipping point'. It was apparent that there was a link somehow between nurses' belief of their need to learn (meeting expectations) and their obligations outside of work. During discussions at the grounded theory trouble-shooting workshop, Barney Glaser suggested that what the nurses were doing was personally resourcing their learning. He had captured it, this was what the nurses were doing, however, at this point my results were still at a very descriptive level. I was describing how the nurses personally resourced their learning without fully understanding and articulating why and how they were doing what they were doing. I then conducted further interviews and through memoing could conceptualise this further to discover that nurses were actually economising their learning, in fact, they were using digital technologies as a tool to economise the resources they needed to contribute to their learning. It also became apparent that the nurses' main concern was not just maintaining competence, but maintaining competence with the resources they had available to them. Although at this stage my research was at a descriptive level, I knew I had finished collecting my data, as nothing new was coming from my interviews, and no new variances were appearing from the data.

Following is an example of a memo that brought 'awareness' to the forefront as a category and also was the beginning of my identifying the participant's decision making in regard to economising learning:

> *Meeting expectations is done by the nurse having an awareness of the need to improve knowledge. The awareness will be of an urgent need or a need that can wait, and will be an awareness of how much they will need to learn that will influence how they personally resource that learning. How they personally resource their learning is also dependent on the cost and the resources.*

And further on 'economising' after more interviews and theoretical sampling.

> *They just want to meet expectations in the best way possible using the least amount of resources possible.*

And finally:

Mobile learning makes time for the participants by allowing them to fit learning into their life.

It was evident, as these sample memos indicate, that the participants were economising learning, through their use of mobile devices.

3.8.8.3 *Theoretical sampling*

Theoretical sampling is a central tenet of grounded theory methodology (Coyne, 1997). Theoretical sampling is where, after the researcher has been in the field and categories and their properties are becoming apparent, the researcher seeks to find what variances there are in these categories and properties from selected participants. The participants are selected on the probability that they will be able to give more clarity to each of the categories (Coyne, 1997; Glaser, 1978). Further, categories are not specifically being sought at this stage of the research, however, may surface from the data. Theoretical sampling will further develop the properties within categories and strengthen the theory. Once there are no new data emerging for each category, the researcher then stops actively seeking further information for that category (Stern, 1980).

Through collecting data from diverse groups within the substantive population, the theory will become strengthened as the researcher compares differences and also likenesses between the groups. From this, categories will be further developed along with corresponding properties to ultimately generate a theory that will be representative of the group as a whole (Glaser & Strauss, 1967).

The research can also benefit from using different methods of data collection while theoretical sampling. One method may be used primarily, allowing for the different views of the group being researched and aiding in understanding the categories and developing their properties (Glaser & Strauss, 1967). During theoretical sampling, different questions may be asked of the participants, as at this stage the researcher is searching for specific information from the participants (Coyne, 1997; Glaser, 1998). Further questions were added to interviews in this research, to allow a greater understanding of the variances within the theory.

The first eight interviews of the research were from a broad group of post-registration nurses across Australia. However, they were very similar in the issues they were raising. It was when conducting a group of interviews in one hospital, that the differences between nurses and different codes really started to be discernible from the data. This then allowed me to determine further questions to be asked, and which groups to seek further information from.

Additional questions were added at this time including how the nurse goes about continuing learning and what prompts them to learn? The depth and timing of learning were also explored. The interviews were now slightly more structured due to the added questions, however, remained mostly open to allow the nurse to explore what was important to them.

New graduates surfaced as a group that required further research after the first new graduate interviewed introduced different data into the study. New graduates were sought for the research until the properties of categories raised within this group were saturated. With new graduates differing from other nurses in their responses, it was thereafter considered important to sample nurses with a wide range of experience levels. Rural nurses also exposed properties of categories that needed to be researched further, and again this group was sought for further interviews until these properties were saturated.

Another group that needed further exploration were nurses who were challenged by technology. It was difficult to target this group, though, as people seem to be somewhat ashamed of not being comfortable with technology. This group were also difficult to recruit for the study as they did not identify with being able to provide any information regarding mobile learning. With encouragement, however, they were included and added depth to the research.

3.8.8.4 Saturation

As the process of constant comparison occurs, there will come a time where each concept or category has no new properties or dimensions (variances) of those properties. At this time, the concept or category is considered to have reached saturation. As each concept or category is saturated, there is no longer a need for data to be collected for that concept (Holton, 2010). When saturation has occurred

new episodes will be able to be exchanged for existing episodes within a category and the category will not change. This is termed interchangeability of indices (Glaser, 1998). There will come a time in the research when the researcher understands they have their conceptual framework, it forms a theory, and that theory is an accurate statement of the pattern of behaviours being studied. It also needs to be represented in a way that others will be able to use in a like area. This is not just a judgement from the researcher, but, is due to their following the process of grounded theory throughout the study and discovering what is needed in that area being researched (Glaser & Strauss, 1967). This was difficult to ascertain in this research, as the core category was not able to be determined by the researcher until late in the study. It was obvious, however, what was important to the nurses and the memos were pointing me to the core category, however, I could not name it. This was most likely due to the fact that I was a novice with grounded theory research. Therefore, a break was taken when I found no new data were arising from the interviews and the categories were considered saturated. The memos were then sorted to determine the conceptual framework. At this point, gaps were identified in the theory and theoretical sampling was continued through further data collection to develop the missing concepts.

3.8.8.5 *Sorting and raising of the conceptual level*
Towards the end of the research, after the concepts are saturated, the researcher will sort the memos', and it is during this stage that the dominant theoretical code is likely to emerge. Sorting is an essential step in development of a theory. This is conceptual sorting as the memos are the ideas generated from the data and not the data set itself (Glaser, 1978).

 "Sorting helps the analyst integrate the theory; in the physical display of their thought processes, the appearance of the theory begins to take shape" (Stern, 2007, p. 120). To undertake the sorting of memos, the researcher collects all the memos breaks each memo into single ideas and starts placing them in piles depending on how they relate to each other. It is a messy process that is usually conducted by hand where the researcher has room to spread the memos out. The sorting continues and changes made to the piles until an outline of the theory emerges (Glaser, 1998; Holton, 2010). Sorting also generates more memos as the researcher grapples with

the relationships and similarities of the memos, further raising the conceptual level of the research (Holton, 2010).

Sorting was conducted in this research, by using the memos and physically sorting them to conceptualise the patterns of behaviours identified in the categories. Sorting did not come easily for me as I was sorting for what they were doing again with very descriptive titles I had placed on them, however, was advised by Helen Scott not to name the memos and instead group the memos for similarities. This helped, however, I still headed for descriptive terms. As I had read in the literature numerous times to trust in the method, I kept looking at the codes and memos to determine how they fitted together to explain behaviours. I also wrote more memos. Eventually, through this process, I was able to see that the nurses were in fact not mostly concerned about maintaining competence, instead, their main concern was about maintaining competence with limited resources. Being able to visualise the whole theory on a table, greatly assisted me in identifying relationships between memos and developing the outline of the theory for writing up.

3.8.8.6 *Theoretical codes*

After the data has been fractured into substantive codes, it is then woven back together by the theoretical code. The theoretical code is arrived at through memoing and sorting of memos until a conceptual code becomes evident that relates the codes as a hypothesis (Glaser, 1978). The theoretical codes can become obvious throughout the research process, however, are most likely to occur as the memos are sorted. Theoretical codes give the researcher a theoretical framework for the conceptualised categories and properties. They help to relate the categories and properties to form the theory (Holton, 2010). Hernandez (2009) stated, "a theoretical code is the relational model through which all substantive codes/categories are related to the core category" (p. 51). In this statement Hernandez (2009) makes understanding of theoretical codes more understandable for the novice grounded theory researcher. The core category is usually apparent to the researcher before a theoretical code is apparent. By the researcher reviewing possible theoretical codes, they are able to detail the relationship between the substantive codes/ strategies and the core category. In determining the theoretical codes for this research, the following codes were reviewed.

In the book Theoretical sensitivity (Glaser, 1978), Glaser lists eighteen coding families including:

1. The six C's Causes, Contexts, Contingencies, Consequences, Covariancies and Conditions.
2. Process
3. The Degree Family
4. The Dimension Family
5. Type Family
6. The Strategy Family
7. Interactive Family
8. Identity-Self Family
9. Cutting point Family
10. Means-Goal Family
11. Cultural Family
12. Consensus Family
13. The Mainline Family
14. Theoretical Family
15. Ordering and Elaborative Family
16. Unit family
17. Reading Family
18. Models

Glaser (1978), did not intend these to be an exhaustive list of theoretical codes and encouraged researchers to both use these codes as applicable or to develop their own codes. Hernandez (2009) details the further addition of theoretical codes from Glaser in Doing Grounded Theory (1998) and again in Theoretical Sensitivity (2005). Glaser discusses that more than one code can be applied to many studies and that it is the decision of the researcher to choose which code would best suit their study (Glaser, 1978).

Two theoretical codes related the core category of Economising Learning to the substantive codes. Throughout the initial phases of the research, balancing of motivation and personal resources became a substantive category. Balancing is a theoretical code from the Paired Opposite Family which is a theoretical code identified by Glaser in 1998 and expanded on in 2005 (Glaser, 1998, 2005; Hernandez, 2009). All categories of the research, however, did not relate to Balancing. It was eventually found that the core category of Economising Learning related to all categories and their properties as a Basic Social Process from The Basics Family. These theoretical codes were identified by Glaser in 1998 (Glaser, 1998; Hernandez, 2009).

3.8.8.7 *Ensuring data is not forced*

Glaser (1998) discussed forcing at length, and this is a main concern he has regarding other methods. Forcing is when the researcher places their beliefs and preconceptions on to the data or forces the data in a direction, rather than allowing the theory to develop from the data.

As is indicated by not reading in the substantive area of the research prior to data collection, it is preferable to enter the field knowing nothing. However, this is often not possible, as the researcher's area of interest will often be an area where they have a great deal of prior experience (Birks & Mills, 2011; Glaser, 1998). This can be addressed in one of three ways. First, the researcher can interview themselves regarding the area of interest and take notes as to their experiences. The researcher's interview is then compared to the data, as with any other interview (Birks & Mills, 2011; Glaser, 1998). Second, the researcher can put their knowledge to the side and only look at what the data arising from the field presents (Glaser, 1998). Thirdly, if the researcher has done an extensive literature review, this can be published and then their findings constantly compared to the assumptions arising from the literature the same as other data (Birks & Mills, 2011; Glaser, 1998).

The first and third approaches were used in this research, however, only after the second approach had failed. In attempting to put beliefs to the side, it was found that they actually lingered, clouding the constant comparison of data. Therefore, a field note of beliefs was written, and it was found that once my own beliefs were recorded, they could then be put aside, as they were part of the data. Finally, I could write a paper from my knowledge in the area prior to the study, thus substantiating what my prior knowledge and beliefs were. Although I did not publish this paper, it enabled me to determine what was coming from the data and what came from my biases.

Data can be forced through various means, one being incident tripping of the researcher. This will happen easily if the researcher starts telling people about the research too early. Incident tripping is where, through discussion of the core category, the researcher builds on the core category from that discussion, instead of the data, and then the constant comparative method is forgotten (Glaser, 1998).

Incident trippin' causes the research to be under conceptualised. Glaser terms this "impressioning out" with incidents (Glaser, 1998 p96).

Data are also forced by research ending at full conceptual description. Ending at this stage is where incidents have been compared and concepts developed, however, the analysis ends at this point. Theoretical codes have also not been developed through sorting of memos. The empirical description level will have been raised to a conceptual level, with the product being a conceptual description. This happens when theoretical sampling is stopped before saturation occurs (Glaser, 1998).

Logical conjecture is another way the data can be forced in a study. Logical conjecture is where the researcher extends the data with what would seem logical to them, rather than letting the data speak for themselves. If the research is stopped before saturation occurs, the researcher then uses logical conjecture to come up with categories and properties to integrate with the data already collected, to form their theory. The researcher will not recognise this is occurring as they confuse what has come out of the data with their own perceptions (Glaser, 1998).

Throughout this research, I was constantly aware of my own views and paid particular attention to ensuring that I was not using logical conjecture or impressioning out. After approximately 20 interviews, I believed I had a good understanding of the topic under consideration and could describe what was going on. I was concerned, however, that I was projecting my beliefs onto the data rather than letting the data reveal themselves. At this point, I stopped and wrote a long memo describing what I believed was happening in the substantive area. I then went through this memo looking for where I had put my beliefs into the data. Still frustrated with the process, I set up another mentoring session with Helen Scott. Two things became apparent. I was analysing the data using the NVivo program, however, after 20 interviews the data seemed to be being restricted by the existing codes. In an attempt to minimise the number of codes, I was placing the incidents under codes that did not have a good fit with the data. I needed to instead allow the coding process to be more fluid so that I could better conceptualise the incidents and name the concepts. Therefore, the method I was using obstructed my ability to raise the conceptual level of the research. I also found that I had gone off on a tangent and

was looking at the interview as a whole and picking out the major points, rather than coding for incidents. This came about from my previous experience in qualitative analysis. Although under other circumstances these methods would be correct, they are not appropriate to the methodology I was using. Therefore, after this session two things had to happen: 1) I had to go back and reanalyse the data reading line-by-line and open code incident-by-incident, and 2) I wrote numerous memos regarding the concepts and their connections.

When analysing the data line-by-line, I started not only looking at what the person was telling me, but also identifying the behaviours behind the statement. This started to give a lot more meaning to the research, and the meaning started to emerge from that data. My previous efforts were only giving me a very superficial description of the area. However, the revised approach was giving me meaning. Also, the long memo I had written allowed me to identify my own experiences within the area, and these simply became more data: I re-classified my personal memo as field notes, coded my experiences, and treated the exercise as an interview with myself. I also stopped using NVivo as I found I needed to visualise the data as a whole to gain meaning from it, whereas to me the data were hidden in the NVivo program with only parts visual at any one time.

3.8.9   Legitimisation

The product of a grounded theory is legitimised through four outcomes: "Does the theory work to explain relevant behaviour in the substantive area of the research? Does it have relevance to the people in the substantive field? Does the theory fit the substantive area? Is it readily modifiable as new data emerge?"(Glaser, 1998 p17).

The Theory of Economising Learning has been presented to nurses, outside of the research group, who have worked or currently working as nurse managers to determine if it has relevance in the area. They were given a written copy of the theory and asked to critique it relating to their experience. The nurses who have read this theory have given reassurance that the theory is relevant and insightful. The theory has also been presented to educators within one of the hospitals taking part in the research. The educators were asked to give feedback in relation to if the theory was relevant in their workplace, and positive feedback was received in regard to fit

and relevance. Acceptance within the broader nursing community, will however, determine if this theory has relevance and time will determine if it is modifiable as the substantive area changes.

3.9 Limitations

The substantive grounded theory is able to be applied only to the area the research took place in. This research is therefore limited to registered nurses within Australia. It is possible that the research could be expanded to include nurses in other countries, however, theoretical sampling for emergent fit would need to be used to enable this research to be generalised to other countries. To become a formal theory, the research would be taken further, again through formal sampling to the wider community (Glaser, 2012).

3.10 Conclusion

This chapter has explored the reasons behind choosing grounded theory methodology and classic grounded theory in particular. The history of grounded theory has also been discussed, along with a brief overview of the variances from different authors and that of Strauss in particular. Glaser's responses to these changes within the methodology have been included. The methodology of grounded theory has been described through the process of data collection and data analysis, including constant comparison and memoing as it is these processes that ensure the resultant theory is grounded within the data. The process of how this research has been conducted has been discussed within this chapter in relation to the principles of the methodology. The following chapter will present the Theory of Economising Learning.

4 Chapter 4 - Theory

4.1 Introduction

The previous chapter introduced grounded theory as the methodology being used for this research, and specifically detailed the approach of Barney Glaser in undertaking a grounded theory study. The methods used in this research have also been discussed in the previous chapter, which have resulted in the development of a theory, in the substantive area of postgraduate nurses' continuing education.

The main concern of the participants in this research was maintaining competence with limited resources. To resolve their concern, participants undertook a cyclic process of economising learning. The aim of economising learning, for the participants, was to achieve competence through learning that could be undertaken with the resources available to them. A significant part of this process involved the participants balancing use of their resources against their motivation to determine how, if, and when they would engage with learning. This chapter will give an overview of the theory, introducing the major categories and properties. The theory will then be explained in detail to give a broader perspective.

The objective of this research was to determine how nurses currently use mobile devices in their professional and personal lives, in order to inform how mobile devices could best be used in continuing learning. Mobile learning, however, did not come from the data as being the participants' main concern. Instead participants viewed mobile learning as a tool in meeting their learning needs economically. Nurses used digital technologies to reduce the expenditure of personal resources in meeting their need to be competent. Significantly, participants did not differentiate between e-learning and mobile learning.

Overwhelmingly, it was found in this research, that nurses used the internet for their learning. Mobile devices were being used alternately with other digital devices depending on which device was more efficient or accessible at that time. This research identified other factors as being important regarding how and when nurses accessed learning and engaged with learning such as; time,

financial, learning environment, and knowledge. Mobile learning / e-learning had influenced these factors especially in regard to time and money, and was where mobile learning fitted into continuing learning.

4.2 Economising learning: Overview

It was found that people learned within the context of the organisation, in this case the hospital. The organisation impacted every part of the cyclic process of Economising learning, independent of whether the learning was occurring inside or outside of the organisation. Figure 4-1 presents an outline of the cyclic process. Each stage of the process is then broken into parts to be discussed in further depth below.

Figure 4-1 Process of Economising learning

4.2.1 Defining curriculum

An individual will have a personal curriculum. That is, they have personal beliefs regarding the knowledge that they require to undertake their work. Nurses' individual curricula change over time, depending on their experiences and knowledge. As the nurse continually travels through the cycle, the changes to how they define their curriculum will impact on all other stages of the cycle. Therefore, defining curriculum is the beginning and end of a cyclic process. As they become increasingly aware of the environment in which they work, these changes will particularly impact on the nurses gaining of awareness for a need for learning.

4.2.2 Gaining Awareness

Awareness comes from falling short of the expectations of self and expectations of others, due to a need to *step* or in response to *educational current* (defined below).

Falling short: When falling short, nurses will not have the knowledge to undertake their work at a level that meets their personal expectations. This knowledge deficit requires immediate action to fill the knowledge void, and will then be added to the nurse's personal curriculum.

Expectations of self: Every nurse has individual personal expectations in regard to the knowledge they perceive they need for their work position. This will also inform what they develop as their personal curriculum. For example, some nurses will be more task-orientated and will only expect to be able to undertake tasks that are required for their work, however, other nurses will need to know the background of the process and have knowledge of the research behind best practice.

Expectations of others: The expectations of others in their work area will impact on the nurses' expectations of themselves and their awareness of the need for learning.

Stepping: The person will become aware of a need for learning due to wanting to step into another position or to advance in their current position.

Educational current: Every organisation will have learning opportunities for employees. The (current) amount of these opportunities will impact on awareness.

4.2.3 Learning opportunity

People connect with a learning opportunity in two ways: 1) They will become aware of a need for learning and will seek out the opportunity, or 2) they will take advantage of an opportunity they come into contact with, through the educational current.

4.2.4 Balancing personal resources

People will balance their motivation to undertake learning against the personal resources required to undertake that learning, to determine how and if, they will

engage with a learning opportunity. The person will also use various balancing strategies to reduce the amount of personal resources required to undertake the learning.

Motivational issues: When people undertake learning, they need to personally resource that learning. This is underwritten by the fact that no learning occurs without the learner firstly seeing the need for that learning, and then allocating personal resources to undertake that learning. Therefore, there needs to be apparent value in learning which will outweigh the cost to the individual for engagement in learning to occur. This value is the motivational factors for learning. People will be motivated to learn from being outside of the knowledge level required for their personal curriculum. The further away from these expectations they are, the greater will be the motivation for learning. Individuals will judge each learning experience against their personal curriculum to determine if it will provide the learning required.

Personal resources: Personal resources include time, money, learning environment and knowledge.

Time: Relates to the amount of time the person needs to allocate to the learning.

Financial: The monetary cost the learning will incur for the individual.

Learning environment: The space in which the person learns, the outside stimulation or distractions within that environment, and the physical resources that the person has to learn with. The learning environment will include computers and the internet.

Knowledge: The knowledge that the person brings to the learning. This is the prior learning in the topic, which impacts on the time it will take to complete the learning. Prior experience of the learning method that is used will also have an impact.

4.2.5 Balancing strategies

Digital technologies: People will use digital technologies depending on their availability to them, their connection to the internet and their knowledge and comfort with using them. Based on this, each individual will use the technologies differently and in varying degrees to economise the resources needed to undertake the acquisition of knowledge. The ability to access information quickly is an affordance of digital technologies that saves time. People combine that ability with the following behaviours to economise their personal resources through the use of digital technologies.

Multitasking: When multitasking, people will undertake learning while involved in other activities; travelling or exercising for example.

Targeting: This allows people to filter extraneous materials and target the knowledge that is applicable to their circumstance, and knowledge needed.

Catching time: People take advantage of spaces within their personal life that they are able to allocate short periods of time to learning, therefore, catching time. An example would be, when a mother undertakes learning after children go to bed.

Staying connected: People will maintain a connection to a group or an organisation to receive learning opportunities.

Sifting and sorting: When information is received it is sifted, to determine if the learning coincides with their personal curriculum, and then relevant learning is sorted to determine when and how individuals will engage with it.

Compromising: Compromising occurs when the personal resources to learn outweigh the motivation to learn. Nurses will therefore compromise their definition of competence.

Balancing will be affected by the style of learning they are engaging with and the style of learning will also be dependent on the person's balancing.

Therefore, balancing and engaging will be conducted dependently on each other.

4.2.6 Engaging

When engaging with learning, nurses will engage in one of three ways.

1. *Learning on the run:* When learning happens at a time that the knowledge is needed and will be directly applied.
2. *Pre-emptive learning:* Learning in advance of needing the knowledge.
3. *Credentialed learning:* Learning with a formal curriculum that results in a qualification.

Learning on the run, pre-emptive learning, and credentialed learning will be undertaken within the overall context of the workplace.

4.2.7 Organisation

The process of Economising Learning is undertaken in the context of the organisation.

Work culture: The importance placed on learning and best practice within the workplace.

Resource access: Access to learning materials through sources such as computers and in-services or seeking mentoring from senior nurses will impact the amount of learning that is able to take place within the workplace.

Mandatory learning: within a workplace impacts on the amount of learning related to the nurse's personal curriculum that the nurse is able to undertake.

Organisational support: Support provided by the organisation potentially reduces the amount of personal resources the nurse needs to contribute to learning.

The practices within the organisation will impact on every aspect of the process of Economising Learning.

4.3 Economising Learning: How nurses maintain competence with limited resources

4.3.1 Defining curriculum

Figure 4-2 Process of Economising Learning: Defining curriculum

As represented in Figure 4-2, defining curriculum is the start and also the finish of the continuous process of Economising Learning. A nurse will develop, over time, an awareness based on what they need to know to be competent to their level of satisfaction within their work area. This, however, takes time and nurses new to the area will have a limited awareness of what knowledge and skills they will require. Through growing awareness, nurses will develop their personal curriculum. The nurses' curriculum is based on what they identify as the knowledge needed to meet expectations in the area in which they work. The following is from a new graduate:

I'm prompted to go to education by common themes emerging on the ward, for example renal and chest pain.

This statement is common to staff as they see what is necessary knowledge for the area in which they work, however, this gets expanded when needing to know more, as they gain experience and consequently gain more responsibility. The personal curriculum will be similar between the experienced nurses in the area, however, as each nurse's experience is unique, so will their curriculum be unique to them. When novice nurses start in a work area, they will have a baseline awareness of the knowledge they need to complete work tasks,

however, not in the minutiae of the area or what is best practice. This new graduate identifies learning specific to the workplace:

…….you can't learn the hospital procedures at uni.

As the nurse's experience in the area grows, they are faced with more and more circumstances where they become aware of the need for knowledge. There will, however, be times, where nurses believe they have the knowledge needed for the area they work. However, this is simply because they have not expanded their curriculum due to lack of awareness. This participant is in this situation, where they are not considered an expert in their area, however they do not identify a need for further learning:

I'm comfortable and don't need learning at the moment.

The curriculum will then be evolved through the cyclic process of economising learning.

4.3.2 Gaining awareness

Figure 4-3 Process of Economising Learning: Gaining awareness
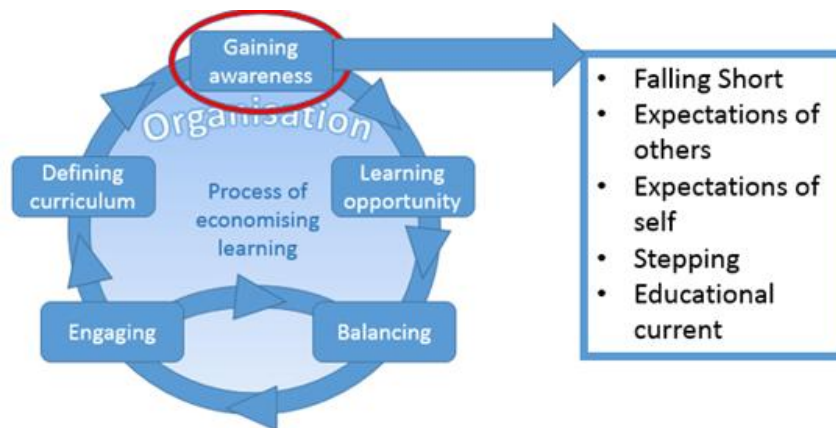
A nurse must become aware of a need to learn. This will be based on their evolving curriculum, as discussed previously. Gaining awareness is achieved through the five properties indicated above (Figure 4-3): falling short, expectations of others, expectations of self, stepping and education current. These will now be discussed individually.

Falling short

Falling short provokes the most motivation as the nurse is unable to do their work unless they gain more knowledge. Falling short is a response to an emergent need that occurs within the workday and needs to be dealt with immediately for nurses to be able to complete their work.

When nurses fall short, they will immediately begin balancing to determine the resources needed and balance that against the urgency of the situation. The awareness of how large their knowledge deficit is, and how that will impact on work outcomes, will determine how they meet this need for knowledge. Their level of digital literacy will also impact on how this knowledge deficit is met. As these nurses discussed:

I look up policies and procedures when I'm not sure, before I do the procedure.

I go to senior staff who are really helpful telling me what I need to know

After having fallen short and learned on the run, nurses will then have an awareness of a knowledge deficit. The topic of this knowledge deficit will then be added to their personal curriculum. When, if, and how nurses will engage with learning to correct this deficit will be based on the later step in the process of balancing of motivation and personal resources.

Falling short also occurs when nurses' knowledge does not meet the expectations of their peers. For example, senior staff members need to have a knowledge level which allows them to give guidance to the less experienced staff.

Expectations of others

The expectations of other staff and managers of the area will impact on the nurses' awareness. The level of knowledge expected will depend on the culture of the workplace and the level of experience and seniority the person has.

All staff are expected to have a level of competence that will allow them to undertake the activities of the work place in relation to their experience. When nurses become senior within the work unit, they will be required to assist more junior staff with problem solving and knowledge acquisition. This will also grow awareness of deficits in knowledge, as they need to be responsible for decisions both for themselves and for more junior staff. The more senior they become and the greater responsibility they take on, the greater the amount of knowledge that will be expected. As this field note from an interview indicates:

Learns so she has information for staff, motivated by what staff need to know and to stay current.

Nurses who are facilitators or educators are expected by management and other nurses to have knowledge that is applicable to the unit they are responsible for and they will be judged on this knowledge. The same applies to nurses who have portfolios for specific areas, where they will be expected to have a greater knowledge than other staff regarding that particular knowledge area. These expectations of others have an impact on the importance nurses place on learning and therefore impacts their motivation.

Expectations of self

All nurses have an expectation of themselves in regard to the knowledge they have. This varies between being able to carry work out independently, to having an expectation of themselves that they will have a thorough understanding of the area and be able to react appropriately to any situation that arises. Whenever they become aware that their expected knowledge level is challenged, nurses are prompted to engage in learning. This provides motivation due to their wanting to be comfortable with their knowledge level.

Nurses will also have expectations of themselves in regard to where they sit within their career and will undergo further credentialed education if they want to be promoted. This will then be related to the expectations of others. Therefore, the higher the nurse's expectations, the greater the motivation for learning they will have. When nurses have a high expectation of themselves in

their work role, they will also aim to achieve the best outcomes within that role.

When motivated to do a better job, nurses will pre-emptively learn and also challenge current knowledge with an aim of achieving better outcomes within their work. Their awareness will also depend on how reflective they are in their practice, and the learning environment of the organisation. The following is an example of a nurse who consistently looks for new knowledge:

There's always something new, I have an enquiring mind.

Stepping

Stepping is also related to expectations of self and expectations of others. However, it is not simply an awareness of the need for knowledge but is an awareness of a need for credentials.

In stepping, nurses' will take on the curriculum of the learning provider to gain credentials in their specialty. When stepping, nurses undertake formal education to give them credentials in the area they are working. This both gives them the required knowledge as determined by the curriculum of the formal degree, and gives them a qualification in the area. Nurses can undertake stepping at any stage of their career. When contemplating stepping, nurses' will balance the need or their motivation for undertaking the course and balance this against the personal resources they have to apply to it. This decision is made at the beginning of the course and commitment made for the duration of the course unless their ability to apply personal resources or motivation changes. As mentioned in this interview field note:

The nurse was concerned with the large cost of university courses and needed to weigh that up against the effect it would have on their family. Could they afford it and would the cost be outweighed by the benefit to their career?

Educational current

The educational current is the amount of learning that the person has awareness of both within and outside of the workplace. The educational current is made up of learning opportunities that are made available in the workplace for staff to attend. It is also education outside the organisation that is promoted to staff within the organisation. Small amounts of information that is sent by nurses to other staff within the work place increases the educational current. This information is highly influential in encouraging others in learning and saves people time with the education coming to them.

The positively motivated nurse increases the educational current in the work area by sending information to the less-engaged persons, therefore, changing their personal curriculum and raising their awareness. Sending information could be part of their position description if they are an educator or facilitator. If people have a special interest in an area or have a portfolio such as infection control, they will also send information to other staff. As this participant comments:

I get emails and links to education, and I send links to staff as the infection control rep.

The positively motivated and connected nurse creates turbulence in the educational current by raising expectations of the more passive learners. This drags people into more pre-emptive learning as the connected nurse sends information to other nurses, which is relevant to the area. They achieve this by leaving articles and information in the work area, and also by holding in-services during work hours. This current of educational materials causes turbulence and creates an educational pull. Although valuable, face-to-face in-services will have less pull, as they will not access the majority of nurses within the work area. The moderately balanced nurse is sensitive to the turbulence in the educational current created by the positively balanced nurse and is more likely to engage with education when the turbulence causes expectations to be raised. This nurse will receive most materials in this way. As this participant asserts:

I don't have time to look for education, so it's good to have it sent.

The educational current is important for people who are consistently connected, as they receive multiple opportunities to be able to access education that will meet their curriculum needs. The current, however, needs to be a balance between being enough to give wide opportunity, without being too much, so the nurse starts to disregard the information due to overload. The educator of the area influences the flow of education as many nurses commented that the educator/facilitator sent them messages with education or educational opportunities that they could sift through to decide if the education was suitable to them. As stated by this participant:

The educator showed us apps that were good, it helped with learning about ECGs.

The educator/facilitator is mostly a respected person within the area. If the educator/facilitator isn't respected or sends information that is not relevant, the information they provide for nurses will not be as well-received and not cause the turbulence needed to promote engagement in learning. As indicated by this participant:

They [facilitator] send emails that aren't applicable to our work, so I don't read them.

4.3.3   Learning opportunities

Figure 4-4 Process of economising learning: Learning opportunity
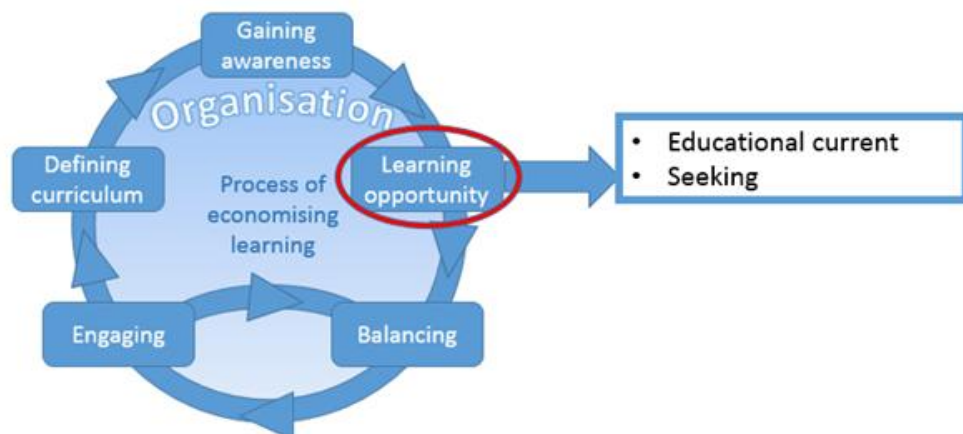
A learning opportunity is where the nurse comes in contact with learning materials and has the opportunity to engage in that learning. The opportunity can come from a variety of sources, including but not limited to, mentoring, in-service education, private research and credentialed learning. The learning opportunity will either flow to the nurse through the educational current or the nurse will seek out the learning opportunity (Figure 4-4).

Educational current

The learning opportunity will either flow to the nurse through the educational current as described above, or will be sought out by the nurse. Therefore, the educational current not only raises awareness, it also provides the learning opportunity for the person to access, as is discussed by the participants below:

Education is everyday at handover for thirty minutes and sessions are repeated… some could be videoed.

The educator sends things via email, I check things on my phone and then open them on the computer. What interests me I will read.

Seeking learning

In seeking a learning opportunity, nurses will search for learning opportunities or information with what they have available to them. In seeking learning nurses will use elLearning and will contact the educator.

eLearning: Nurses will search for learning opportunities or information via the internet. This may be through an organisation they belong to or a website they trust. Participants stated they use eviQ, an oncology website, for chemotherapy information. They also stated they used Medscape as it is a website they trust.

Nurses who are comfortable with digital technology will use mobile phone applications as a quick access for surface information, as this interview field note states:

Has lots of medical apps, ECG apps, Merck manual app and Peads app for parameters and doses in emergency.

Nurses also search for 'quick' information via the internet when learning on the run or in combination with other learning methods. For example:

I Googled answers to the ortho package.

Nurses can also search for their own literature through accessing textbooks when they do not have access to the internet.

Contacting the educator: Nurses will seek out the educator or a senior staff member to either provide the information to them, or to advise them of where they could attain the information. This results in further contact with learning packages, apps, websites, articles, workplace learning, short courses and conferences that the educator will promote to the nurse. As indicated by this participant:

I go to the educator if I need to know something, I wouldn't look at YouTube because I don't have internet at home.

This interview field note also indicates the importance of the educator as a conduit to learning opportunities:

The educator lets them know what is available and she picks what she is interested in. Goes to face-to-face courses, some online courses. Doesn't mind any type of learning, online or face-to-face.

The educator is both a source when people are seeking information and is a contributor to the educational current, therefore educational current and seeking at times occur simultaneously.

4.3.4 Balancing
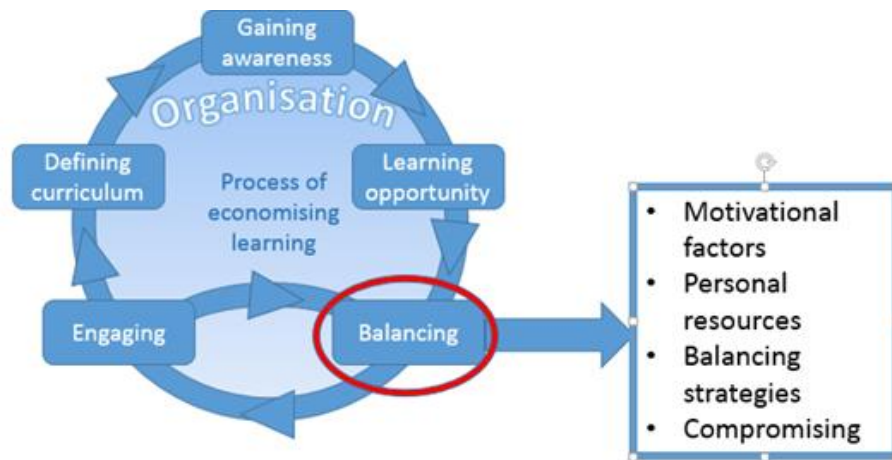
Balancing is an important step in the process of economising learning. The nurse will balance their motivation against their personal resources to determine how, if and when they will engage with learning. If, the personal resources required outweigh their motivation, they will compromise. Balancing can be affected by the balancing strategies that nurses use to reduce the personal resource burden. Balancing will therefore be discussed in relation to the properties of motivation, personal resources, balancing strategies, and compromising (Figure 4-5).

Motivational factors

The motivational factors are the factors that motivate nurses to engage in learning. Nurses are motivated to learn when they fall short, are aware of a relevant opportunity, or do not meet their expectations or the expectations of others. The amount of motivation will be dependent on the individual's personal beliefs and environmental factors.

When nurses have an awareness of falling short, they will have an urgent need for learning to complete their work. This results in a high level of motivation to engage in immediate learning on the run. Unless the knowledge needed is fully addressed at that time in the workplace, they will then have increased motivation to undertake the learning at a later stage.

When becoming aware of a learning need through expectations of self or others, the greater the knowledge gap, the greater the motivation will be to engage with learning. Nurses will want to remedy the lack of knowledge before they need to apply it in the work situation and will therefore have high motivation to balance against their personal resources.

In stepping, nurses' motivation will be dependent on the desire of the person to make a change in their work life. Motivation will also be dependent on the importance a credential has in that workplace and the professional rewards for obtaining the credential.

Becoming aware through educational current is a more passive process. The expectations of others within the workplace due to the educational current do increase motivation in varying degrees. As nurses come into contact with learning opportunities through educational current they become aware by identifying these opportunities as relevant to their workplace. They also witness others identifying these opportunities as important, which raises awareness. Even if the motivation is not being increased greatly by educational current, it will be supplemented in balancing, as this learning will require fewer personal resources.

Personal resources

To engage in learning, nurses need to invest personal resources. Personal resources are able to be discussed in terms of the types of personal resources; namely, time, money, learning environment, and knowledge. Nurses will have a unique range and availability of personal resources available to them, to allocate to education as they choose. Personal resource allocations always put a negative pressure on learning as the motivational factors need to outweigh the amount of resources being allocated.

Time
Time and its availability have a major influence on how, when and how much education nurses will access. The amount of time nurses will allocate to continuing education is related to their personal values and beliefs in regard to

other aspects of their life and work. Nurses will allocate time to education so that it will have less impact on their family and personal lives. They will reduce the impact of time by, for instance, completing continuing education at work or when they have time around family commitments. The amount of time taken to undertake continuing education also varies with what is being learned and their previous experience in the area being studied.

Nurses limit the resources that they allocate to continuing education if they have priorities within their life that have greater importance to them than work at that particular time. Life priorities would include the family commitments, such as young children or older parents. As one participant stated:

You need to be aware of people's seasons in life. When you have children you can't go to education, Mobile would be amazing as it would be easy to access here and there.

Nurses also need to "go the extra mile" if they do not often work in normal business hours. These nurses are not present in the work place at times when education is being offered face-to-face, and therefore have to use personal time to attend or are unable to access the education. Some staff indicated that education was held at their workplace outside of normal business hours to enable equal access for all staff.

Money
The personal resource of money required to undertake education is important in balancing. This is often a limiting factor as nurses will have a finite amount of financial resources that they are able to invest. The financial costs of education are both direct and hidden.

Registration fees for continuing education are often expensive especially for face-to-face learning. ELearning is usually cheaper however not always. Nurses will therefore look for value for money in courses. They will be more likely to attend or access learning that is free or at a lower cost, unless they are able to see that the benefit gained will be valuable for them as an individual.

Credentialed courses are the most costly form of education. When nurses are balancing for this type of learning, they will determine the value the education will have for their career or knowledge base. They will then balance that benefit against the personal financial cost and the impact that cost will have on their personal life.

A significant hidden financial burden is the travel and accommodation required when attending continuing education courses away from home. This adds an extra burden on the individual financially and therefore adds extra force on the benefit or motivation required from the course. Other hidden costs include paying for childcare to attend education outside of their normal working hours and losing penalty rates by being rostered to work in normal hours to attend education.

Employees will make personal decisions regarding how much of this personal resource they will allocate to learning. Lack of willingness or ability to financially resource education extends to nurses' access to a computer, tablet, or phone to undertake eLearning. In undertaking eLearning, nurses will need to have internet available to download materials, which is also a financial cost.

Learning environment
The learning environment includes the physical space nurses use to learn in. Within this space will also be the equipment they have at their disposal such as a computer, laptop or mobile device and the connectivity of that device. Additionally, a space is needed in the learning environment that allows them to concentrate on their learning. The learning space could vary dependent on the time of day they are learning, and therefore nurses may need to time their learning so they have fewer distractions. As commented by this nurse:

I usually go online after the kids go to bed, it depends what device I am using as where in the house I will be.

Nurse's locations determine if they have the physical resource of the internet to allocate to learning. In some locations, nurses will have limited or no internet connection. This greatly impacts their access to learning online. With limited

connectivity, nurses will need to access the internet at times such as late at night when there is less internet traffic. Some materials are also not able to be downloaded at all on a slow internet connection.

A satellite connection to the internet can be affected by the weather. When there is cloud-cover, there is no internet and this can last for significant periods of time during the wet season in some parts of Australia. There is therefore less choice as to the timing of their education or they may need to go to extreme lengths to acquire their learning materials. As one participant explained:

Internet at work is slow or non-existent, so I download or upload late at night, or I drive to ----- to do it, I've even had it flown in on a usb.

Although some people are living in a locality that has good accessibility to the internet, they personally may not. When moving house, a person may have to wait for an extended period before being connected to the internet in their home. Nurses may choose not to, or lack the finances to be connected to the internet at home. This restricts the amount of eLearning and the type of eLearning able to be undertaken. They will then need to plan to download or upload their learning while at work, where they can gain intermittent access via Wi-Fi, or to a limited extent, via their mobile phone.

Alternatively, nurses will look for other means to access education that do not require the internet as described by these nurses:

"I use nursing textbooks and Mosby's [a medical, nursing and health dictionary] I've just moved and don't have internet."

There are often distractions in nurses' learning environment within their own home. Nurses time their learning at home to when the learning environment is suitable, when interruptions from others in the household will be minimal. This then narrows their opportunities to spend time learning.

For learning to occur, there needs to be an environment that allows nurses to undertake their learning in a situation that is suitable for them personally. Their environment can also influence the choice of method of learning, for example,

in different parts of their house they will either use a computer or a mobile device.

Nurses may also restrict the environment in which they learn or expand the environment dependent on their balancing. If a nurse has a low motivation, they will only undertake learning at work or when supported by the organisation to do so. However, nurses who have significant motivation will manipulate their environment to enable them to undertake learning. Manipulation of the environment will be achieved through multitasking or catching time, as discussed later in the chapter (pp 85 and 87).

Knowledge

Nurses' prior knowledge will influence their engagement with continuing education. This prior knowledge is a resource they bring to their learning. It will include the knowledge a person has about the topic they will be studying and also their previous experience with the method of learning. The more positive the prior experience using the learning method nurses have, the more likely they are to undertake the education.

Even though it was found in this research that the majority of nurses are now comfortable with using mobile devices and the internet, there are some who are still unsure of using technology. These nurses are less likely to use technology to its full capacity, and therefore not have ease of access to education via these methods. Many of these nurses indicated that they would use technology for education if they had to and if they were given support in the use of the technology.

Nurses need to have a belief that by undertaking a learning opportunity they will receive value for their input of resources. If their prior experience with the person providing the learning is poor, they are not likely to invest their resources and undertake the learning. Experienced nurses will often not engage in particular learning opportunities if they believe the provider is less knowledgeable than themselves, or they believe they will be wasting their time by trying to learn something they already know.

An experienced nurse has a greater knowledge in general in the profession and will bring a unique amount of knowledge to each learning experience. A novice nurse, however, has a lesser degree of experience and brings less knowledge to the learning experience. Therefore, it takes more learning for the novice nurse to get to the same knowledge level as experienced nurses, as novices do not have the prior knowledge to help scaffold their learning. This results in two outcomes: 1) Experienced nurses will get frustrated if they have to spend time on learning that is not new to them. Therefore if they are not catered for, they will lose motivation for the learning. 2) Novice nurses need to invest far more personal resources into the learning experience and therefore need more motivation.

Balancing Strategies

Using digital technologies
Digital technologies are used by nurses to economise their learning through reducing the amount of personal resources or reducing the impact of contributing their personal resources. Through the use of the digital technologies, they are able to receive the same knowledge outcomes for less personal resource expenditure. Using digital technologies will save time through the ease and speed of access to information. The financial cost of learning using digital technologies via the internet is often less than with other methods. Nurses, however, also use various strategies when using digital technologies that help them gain time or reduce the impact of the time used on their lives.

Multitasking
Multitasking is used to take advantage of pockets of time, allowing nurses to not dedicate as much time specifically to engaging with learning. Multitasking is limited to either paper-based or digital learning and is where mobile learning comes into its own. Nurses use mobile devices to engage with education at times and in places where education is not usually undertaken. Many examples were given by participants. Education was being engaged in on public transport while going to work, and while waiting for appointments or children's activities. This type of learning is mainly via visual means, however, it is also

possible to listen to material with headphones. Using technology in this way modifies the learning environment to allow people to undertake learning in places they would not normally without the use of mobile technologies. Travelling is a popular time to multitask as discussed by the following participant:

I use an iPad for my course and take it to work on DropBox, I can work on the train going to work.

Nurses are engaging with audio learning while they are doing necessary tasks within daily life such as exercising, doing the housework, or gardening. For example:

I listen to audio when doing the housework or mowing the lawn.

Nurses who are parents use multi-tasking frequently. These nurses have time voids while waiting for children at sports or appointments, and take advantage of this time to do small amounts of learning. Engaging in multitasking requires the nurse to have a certain degree of motivation to take these opportunities when they arise.

Targeting

Experienced nurses are often frustrated when attending seminars and workshops as they will need to attend the whole workshop to possibly only receive some, if any, new learning, as the education is targeted at an audience with a variable knowledge base. Participants also commented that in some circumstances the questions from other people are frustrating. Questioning is important for the less experienced learners in order to gain feedback and therefore understanding. This led to the more experienced staff preferring to learn online, informally, as they are able to target the knowledge they need and therefore spend fewer personal resources to get the same or better outcomes. Experienced nurses are also more likely to undertake e-learning as they are able to 'skim over' the information they know and focus on new learning. As was indicated in this interview field note:

Would rather learn online as she's sick of bad presenters and feels like she sometimes has more knowledge. Can learn what she wants to learn and complete it in her own time, without wasting a day of her leisure time.

This was not the case for all experienced nurses and was dependent on their motivation for learning in general and their availability of the personal resource of time. Targeting was used when nurses were aware of the need for learning, however, they needed to limit the time spent gaining knowledge.

Catching time

For nurses to engage in learning through catching time, they need to be highly motivated, as it requires them to take time away from other activities. Catching time is usually at the cost of personal time, and is woven into their life to minimise the impact on their life.

Catching time differs from multitasking in that when nurses catch time they are only learning at that time. The time is therefore committed to engaging with learning. Nurses will make time available for learning by using time when they are not committed to other obligations. The time they will use will be when their family is engaged in other activities, such as sport or more frequently, sleep. This also means that the learning they are engaging with needs to be flexible and available when the moments of time exist. eLearning is therefore valuable to nurses that catch time. eLearning generally allows learners to engage at a time and location suitable to them. An example of catching time was given by these people.

I stay back after work if my son is at after school activities.

After the kids go to bed, I can do education.

Catching time can also be used within the work environment with nurses using small amounts of time to access learning online.

Staying connected

Some nurses have constant connection with the world through their mobile device or at the very least, daily connection through access to the internet.

These people are connected to the internet not only for learning, but use mobile devices for social media, communicating with others, searching for information, and shopping. Through staying connected, nurses are able to engage with small amounts of information frequently and therefore use less intrusive amounts of personal resources to engage in professional learning.

Staying connected in regard to learning for some nurses will mean checking emails that have been received, or connecting to Facebook or Twitter. Some nurses are also part of specialty-related online groups or subscribe to journals relating to their area of interest. It could also mean attending conferences in an area related to their areas of expertise. Nurses who are more connected will usually be part of groups online that are related to their speciality, such as eviQ, an oncology website, Crit Nurse, or Medscape. Nurses also have websites that they access on an intermittent basis such as the Australian Resusatation Council and CRANA website. More connected nurses will have a greater knowledge of the online resources available and will access them more frequently than less engaged nurses.

When staying connected, nurses are consistently sifting and sorting information and placing that learning within their lives in a seamless way, using the behaviours of multitasking, catching time and targeting. When the organisation they are working for, or a group they subscribe to, sends information via social media or email, nurses are able to match that information to their personalised curriculum and sift the information based on its relevance to them at that time. They then sort the information to determine if they engage with it immediately or if it requires further exploration at home or on the computer rather than via their mobile. As the nurse states:

I don't have time to look for it so if it comes to me that's great….I send the emails from work to home and will access it in other places while I am waiting.

Sifting and sorting
Sifting and sorting occurs in relation to the education current. It will occur as nurses are made aware of any learning opportunity including education in the workplace and outside face-to-face learning opportunities. Sifting and sorting

mostly occurs when nurses receive information through email, via social media, in paper form or via other forms of communication. The information comes from peers, journals and online groups they subscribe to.

Sifting occurs when nurses receive the information and make a decision as to if it is part of what they see as consistent with their curriculum. Nurses will sift out the irrelevant materials that do not relate to their personal curriculum, or keep material if they believe that it meets the knowledge needs of their curriculum. Additionally, material will be sifted that does not come from a reliable source.

After the unwanted learning is sifted, the learning that nurses wish to engage with will be retained. When sorting information, they will make a decision according to their personal resourcing considerations. They may engage with the material immediately in whatever medium it is presented. They may also save the learning for when they have more personal resources to allocate or engage with it in a mode they are more comfortable with. They may also store it to access when catching time or multitasking

Some nurses prefer to undertake to read more detailed information on the laptop or desktop computer as they prefer a bigger screen. These nurses will change the device if needed to accommodate this preference. Some nurses also like the feel of paper and will therefore print out or access information that is in paper form.

Compromising
As with any investment of resources, nurses monitor their personal investment through economising/budgeting. That is, nurses aim to gain the greatest amount of knowledge from the least amount of personal investment. The amount of resources required by nurses to engage in education is able to be reduced or changed in a number of ways if they have enough motivators to overcome the need for resources. Nurses are after the best value for their investment.

Nurses with high motivation find ways to overcome limited personal resources, whereas people with low motivation will give up and not engage in learning.

People will not always compromise the learning they need to be competent through lack of motivation, however, at some point the pressure of lack of personal resources will outweigh their motivation.

The pressures due to a lack of personal resources to dedicate to learning and lack of motivational factors, can lead to nurses giving up and compromising their personal beliefs regarding their professional learning needs. When compromising, nurses will be aware they need more knowledge to either undertake their work or improve their work, however, the need is not critical enough to make them overcome the lack of personal resources. Compromising is a matter of degrees, from total non-engagement in learning to engaging, however, not at a level that meets their expectations. An example of this would be isolated nurses who attends education when they are able to travel to workshops or conferences, but who do not have internet access at a standard that they are able to download materials. They are motivated to engage with learning, and may in different circumstances be very engaged with learning, however, due to circumstances out of their control, they have limited engagement with learning.

If nurses balance to undertake learning, the next step in the process is engaging (see Figure 4-6).

4.3.5 Engaging

Figure 4-6: Process of economising learning: Engaging
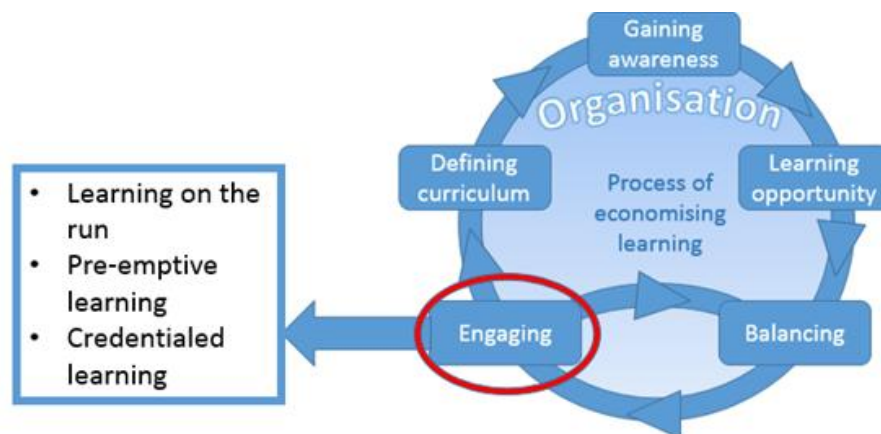
Engaging occurs when nurses have allocated personal resources to the learning opportunity, and engage with that learning opportunity. Engagement will be reliant on continual balancing to maintain engagement. Nurses will engage with learning through learning on the run, pre-emptive learning, or credentialed learning.

Learning on the run

Learning on the run occurs as a response to falling short. Learning on the run usually occurs during work hours as the need for learning emerges due to nurses not having the knowledge to carry out their work. The motivation factors, therefore, will be large and urgent. The personal resources needed are also limited due to this occurring during work time, and, therefore, nurses will not need to personally invest time or money. Depending on the pressures of time within the shift, the learning will normally be found through the quickest way possible.

All nurses will learn on the run, however, novice nurses are engaged in this type of learning most of the time, as they are yet to develop competence in their work area. If nurses fall short without awareness, they will not seek further learning which raises the potential for errors and detrimental outcomes to occur. As the nurses gain experience, they will fall short less frequently.

If the need occurs at work, nurses will access the knowledge through either accessing policy or procedures, through seeking advice from another staff member, or from accessing the information needed through the internet via a mobile device or computer. The most common use of this type of learning discussed by nurses was in accessing information regarding medications.

Novice nurses will be prompted to learn more frequently by falling short as they transition from novice to being competent professionals. They have the background knowledge, but, they are yet to become competent in the work environment. These nurses consequently need to learn on the run. Therefore, they will either find the policy and procedures, and undertake the task according to this, or will ask a senior nurse to provide them with the knowledge they need. They also frequently refer to drug databases or books to

identify medications they are yet to become familiar with. When able to use a mobile phone or computer, nurses will also access these to gain the knowledge they need to complete their work. Falling short helps nurses to become aware of their learning needs and in building their personal curriculum. The area where nurses have fallen short can then be explored further, when more time is available, either inside or outside of work hours.

When novice nurses fall short, they will build this into their personal curriculum and will balance motivation and personal resources to determine if and how they will continue learning. They will undertake learning at home, via their text books or the internet, to learn more and gain the background knowledge that will make them competent the next time they face the same situation. Novices also need significantly more background information to provide them with the same knowledge as experienced nurses. As this novice nurse explained:

Packages are good, because I need in-depth information, I need the background. Video attachments would be good.

Novice nurses need feedback when learning and want to ask questions when engaged in learning, therefore they generally prefer face-to-face learning.

Dependent on the culture of a workplace, nurses do not always feel comfortable in asking others for information when they fall short. This is due to a fear that the person they approach will think they are not competent. For example:

I'm hesitant to ask because it seems like people don't think you know what you're doing.

This lack of support places a pressure on nurses as they need to find out through other means, such as policy and procedures, or by accessing the internet. Learning on the run is usually time critical, and not having the support of other staff can result in a lost learning opportunity and suboptimum work practices.

Experienced nurses will fall short far less frequently as they have a much larger knowledge base. They will continue, however, with the same behaviours as novices when they do fall short. Although experienced nurses are mostly able to complete their work without falling short, they will engage in learning on the run to ensure best practice, or to reassure themselves that they are applying best practice. They will do this through using apps on their phones or by searching on the internet, if they balance to use digital technologies. They also refer other nurses to these apps.

Nurses frequently access the internet when falling short. This often includes using a mobile device as this is a very convenient method of acquiring quick information. Some facilities, however, do not allow mobile phones within the work area, therefore limiting nurses' ability to gain information. This is mainly due to fear that mobile phones will be misused in the work area, with many nurses able to recount instances where people have misused their mobile device and as a result were seen to be neglecting their work. Participants were also careful not to give the perception that they were using their device for personal reasons. Participants stated that having a mobile device would allow them easy access to information and it would be beneficial to them to carry their phone with them at work. Some areas, however, had desktop computers available where staff had access to them and in numbers that made them accessible. These nurses stated that they accessed the desktop computer instead. It was stated however that mobile devices would be more convenient, by saving time in accessing the knowledge they need. As these participants commented:

If I had an iPad at work, I would check policies before doing a procedure and to look up drugs would be good.

I look up Medscape at work as it is quicker and easier, and check what I'm doing is evidence based.

Falling short was identified by most nurses as a motivator for not only learning on the run, but also in motivating them in pre-emptive learning so they do not fall short in the future.

When motivated by falling short, people will often only get the information that they need at that particular instant and therefore they will have competence in the procedural activity without the background knowledge to have understanding, this leads to balancing outside of work. When and how this learning will occur will be based on how great the motivational factors are and the nurse's personal resources they are able to invest in the learning. In this situation, nurses will then search for the information when they have the personal or organisational resources to invest in order to gain understanding. Pre-emptive learning can also be prompted by falling short, when nurses come to the realisation that they do not have all the knowledge they need to perform in every situation within their work area. The topic area in which they have fallen short , then becomes part of their curriculum.

Pre-emptive learning

Pre-emptive learning is learning that nurses will engage in to fulfil their personal curriculum. It is undertaken so that nurses are able to do a better job, therefore achieving better work outcomes or so they will not fall short, and continue to meet the expectations of self and others. This type of learning requires a variable amount of motivation and personal resource allocation.

Being less critical, the balancing of motivational factors and personal resources is significant with this type of learning. Balancing in this context, is able to be influenced by outside factors and the creative means of the person. The higher the motivation and personal resources the nurse is able to allocate or vary due to balancing behaviours, the more likely the nurse is to engage with learning. Learning will be engaged with through a variety of media. The choice of learning method will be based on what they determine through balancing as representing the best value for investment.

Because pre-emptive learning is determined by the nurse's personal curriculum, any information received or education they are prompted to do by the organisation, will be sifted and sorted according to this. Pre-emptive learning is where the most variance in behaviours is exhibited by nurses when balancing. Nurses' likelihood of participating in continuing learning varies

94

greatly due to how they balance their motivational factors and personal curriculum. Therefore in discussing engaging behaviours in regard to pre-emptive learning, the terms 'Driven', 'Passive' and 'Compromising' will be used.

Pre-emptive learning - Driven behaviours

The nurse whose motivation is greater than the personal resources required, will engage with pre-emptive learning. The motivational factors that drive this are a high expectation of themselves and also the high expectation that others place on them. Other nurses will expect these nurses to have the knowledge to provide to them when they fall short . Due to these nurses' high motivation for learning, they will overcome lack of personal resources to engage in learning using a variety of balancing behaviours. Motivated nurses using digital technologies will search for knowledge usually via the internet, and 'stay connected' to various groups online to maintain a high level of competence. They will also have apps for learning, such as ECG apps, that they will recommend to other staff, to assist other nurses with learning specific to their work area.

If learning comes to them via the educational current, nurses with driven behaviours sift the information to their personal curriculum; they then commonly pass this information to other staff. They also sort the information and will use strategies such as catching time and multitasking to balance for time, enabling them to engage with the learning.

Pre-emptive learning: Passive behaviours

Nurses who are more closely balanced, tend to be more passive in their learning and will save time by accessing education as it flows past them, in contrast to actively searching for learning. Therefore, the education current will greatly influence nurses displaying passive behaviours. These nurses commonly 'stay connected', however, may not get material from the numerous online sites, but will access the information recommended to them from the more positively motivated nurses. This requires less time as the more driven nurse has already sifted the information. The qualifier to this is that the nurse sending the information must be respected within the work area as knowing

what is required and being competent. Nurses receiving the information then test it against their personal curriculum to ascertain relevance. If the information that is being sent is regularly not relevant, these nurses will then start to ignore the information coming from that person.

Nurses with passive behaviours will also attend face-to-face education when supported by the organisation, or when motivational factors outweigh their lack of personal resources. They will also complete e-learning, as this type of learning is able to be flexible around their personal commitments. This flexibility allows them to use strategies such as "catching time" and "multitasking". Nurses with passive behaviours are, however, less likely to search for online information and will need to have opportunities provided for them.

Pre-emptive learning: Compromising
Nurses whose motivation is outweighed by the resources needed to engage, will be unlikely to participate in learning. These people will need significant support to either reduce the personal resources required to undertake learning or increase their motivational factors or both. As this comment from a participant indicates:

I can't access emails or education outside of work and little access when at work. Education is only 9 to 5 Monday to Friday and that's not how nurses work.

Credentialed learning

Credentialed learning occurs as a response to stepping, being motivated by previously falling short, and also in response to wanting to do a better job.

University courses take the greatest amount of personal resources and will achieve an outcome of the nurse being credentialed. Credentialed courses will require a great deal of financial investment from the nurse, as the courses cost a great deal. If nurses are undertaking a university course, they are doing so for a particular purpose, such as specialising in their work area or to move into a

different area. They will therefore prioritise resources within their life to achieve the outcome of attaining a further qualification. The benefit of having the further degree will need to outweigh the cost of both financial and time resources. In undertaking formal learning, nurses will also engage in catching time and multitasking to enable them to fit study into their life. This type of continuing education also requires a learning environment that is conducive to study. For example, it would be necessary to have adequate internet connectivity to access the course, as discussed by this participant:

I would like to do a nurse practitioner course however this will be difficult to organise as I will need to move to a different community to have better internet.

Nurses who are displaying driven behaviours will usually seek credentials for the area they work in. Their motivation may not be to change the workplace or to advance in their career, but is always to improve their knowledge in the area. When stepping, they have become aware that their personal curriculum is not adequate to meet the needs of the area and they therefore seek an outside credentialed curriculum to ensure they have the knowledge for any circumstance that will occur in their work area.

Nurses with passive behaviours are less likely to undertake formal learning than nurses with driven behaviours. However, the former will undertake formal learning if the expectations of their work area give them the motivation to outweigh their personal resource pressure. They will carefully weigh the benefits of the learning compared to the required personal resources.

Nurses who are in a position of compromising will not have the motivational factors or the personal resources they are willing or able to allocate to stepping for credentials.

4.3.6   Organisational context

Figure 4-7 Process of economising learning: Organisational context

The context of the work environment will impact the behaviours of nurses (Figure 4-7). The organisation was identified as a significant factor in balancing. The organisation has a direct impact on increasing or decreasing motivation and also in the amount of personal resources nurses need to contribute to their learning. The culture of the work environment in regard to learning has an impact on the people's expectations of themselves. The expectations of others will also vary according to the learning culture within the organisation.

Work culture

If knowledge is valued within the culture of the unit, and the expectation is that nurses will be using best practice, then nurses will feel pressure to have the knowledge to undertake best practice. If there is a deficit, it will come into awareness when sharing information with other staff and in reporting to senior staff. As can be identified in this interview field note:

The nurse learns when the senior nurse does rounds and mentors them with undertaking best practice.

Nurses also indicated that if the hospital was willing to contribute to their education, they were more inclined to contribute personally. This included

giving staff time within work hours, paid time to attend education and also financial support. As one nurse explained:

It helps when work is supportive of education. There was pressure in another hospital I worked at to do everything in your own time. Here you are encouraged more and the atmosphere is different in the hierarchy. When people apply to go to education, they usually get it and it makes you more enthusiastic to also do some in your own time.

Resource access

The resources nurses have available to them for learning will either expand or reduce the choice of learning methods. For example; the availability of computers within the workplace will determine if staff members are able to access a computer when it is needed for eLearning.

The policies of each work area will also determine if nurses are able to access their own mobile device to access information. It was mentioned by most nurses within this research that they would use mobile technologies if they could to search for information when learning on the run.

Accessing senior nurses was another avenue that people used when seeking information when learning on the run. This avenue will be dependent on whether nurses are comfortable seeking information from other nurses. This is therefore an unpredictable source of learning and will depend on staff rostered on each shift.

Access to information is critical for learning and ensuring best practice is applied in the workplace. When computers are not accessible and mobile devices are not allowed in the workplace, nurses are restricted in their ability to access the knowledge needed for on-the-run learning, or for taking advantage of opportunities for pre-emptive learning. If these options are not available, then nurses must rely on senior staff or on paper-based options within the workplace. Three nurses discussed access to learning in the workplace:

There are only 1 or 2 computers in the workplace so it makes them hard to access.

Finding time at work to do training is hard.

We have 5 computers for nurses and doctors so we can always get to a computer.

Mandatory learning

Mandatory learning is completed when it is requested by the organisation or when the yearly mandatory learning is due. Mandatory learning also takes personal resources if is not completed within work hours. Some organisations provided funded days for staff to complete their mandatory learning or staff completed their mandatory learning through catching time in the workplace.

I do my internet education at work. Since there has been eLearning, I am up to date with mandatory education.

If the organisation is demanding too much mandatory learning from staff, nurses then have few personal resources remaining to undertake continuing education that relates to their personal curriculum. They also indicated that this overburdening of information made it difficult for them to determine what education was important and what was not, and that they became desensitised to the requests from the organisation. As this nurse stated:

Online learning is saturated here. It should be refined to only professional development, not to invade. Staff need to feel like they're getting something rather than something being asked of them.

When learning in work time, nurses' balancing changes. Instead of balancing motivational factors and personal resources, they are now also balancing the organisation's resources. The most important aspect of this, as discussed by the participants, is that of meeting the patients' needs, which again comes back to meeting expectations.

Organisational support

By giving nurses financial support to undertake education the organisation reduces the impact of finances when the person is balancing.

Some nurses indicated that education was also held at their hospital outside of normal business hours to enable equity of access for all staff. Working outside of business hours also diminished the time the nurses have access to education staff within their area and therefore these staff also tend to not receive as great a flow of education. This makes eLearning very important for this group as it is accessible to them at any time. This is a comment from a nurse doing night duty:

Education is usually online due to time travel and cost ------I do night duty so I don't get to education.

4.3.7   Defining curriculum

It is appropriate that the theory begins and ends with defining curriculum, as it is the continuation of the cycle, which best exhibits the process moving through time. As nurses come to the end of the process and have engaged or not engaged with learning, they will alter their curriculum in reference to the experience. The experience gained from each time nurses cycle through the process will then inform their future learning.

4.4   Conclusion

This chapter has detailed the cyclic process of Economising Learning. The process of Economising Learning in the substantive area of registered nurses consisted of five categories and their properties: gaining awareness, learning opportunity, balancing, engaging and defining curriculum. These categories are dependent on each other within the process, thereby forming a cycle that impacts on the next cycle due to experience. The cycle therefore evolves and changes throughout the person's career.

Nurses undertake this process to address their main concern of maintaining competence. To undertake learning, nurses will contribute personal resources to their

learning. All nurses have a limited amount of personal resources they are able to contribute to their learning at each moment in time, therefore, they will undertake learning through the most efficient method available.

Continuing learning takes place within the context of the organisation. Part of continuing learning will be engaged within the organisation within work time, with the organisation directly influencing the time and resources available. Nurses may undertake their learning at home, however, the organisation will influence their motivation and the personal resources they are able to allocate.

The following chapter will situate this theory within the literature. The literature will add further data to the theory, and other theories will be explored that augment this research. The Theory of Economising Learning will then be combined with the literature in chapter six to inform the use of this theory.

5 Chapter 5 – Discussion of the Theory of Economising Learning in relation to the literature.

5.1 Introduction

The previous chapter detailed the Theory of Economising Learning. The five categories of the cyclic process were discussed along with their properties. The process occurs within the context of the organisation which impacts on each of the categories and their properties, resulting in the outcomes of the process being dependent on aspects within the organisation.

This chapter situates the Theory of Economising Learning in the literature. As discussed in chapter two, when the literature is reviewed after the research, the reviewed literature will cross disciplines and cover topics that would not have been considered prior to the research (Charmaz, 2006). This will be seen in this chapter as motivational theories are reviewed, along with connectivism. Benner's theory (2001) of novice to expert is reviewed as it was found that the knowledge level of nurses was a property of personal resources in balancing. The literature will be discussed alongside the theory to both add to the literature in each area, and for the literature to add to the theory. The literature will be discussed through each stage of the process of Economising Learning.

5.2 Literature
5.2.1 Gaining awareness and personal curriculum

Nurses become aware of the need for learning when they do not have the knowledge they need to carry out their work, the knowledge they expect of themselves, or the knowledge that others expect of them. Education current within the organisation will have an impact on nurses' gaining awareness of knowledge deficits, as learning opportunities flow past and the expectations within the work area are raised. Through awareness of a need for knowledge and experience in the clinical area, the nurse will develop a personal curriculum.

Similar to the findings of this study, Michael Eraut (2007) proposes that learning at work is derived from the goals of the organisation, and that people will from time to time identify a need to improve their knowledge in order to take on new work, expand their work, or improve the quality of their work.

They then develop learning goals, from which they will take advantage of learning opportunities available, and/or engage in self-directed learning activities (Eraut, 2007).

The awareness of the need for learning grows with the person's theoretical knowledge and clinical ability, allowing the nurse to make informed decisions regarding knowledge deficits. This then places greater emphasis on the need to have a work culture that displays curiosity and focuses on the dynamism of the field (J. A. Eason, 2009).

Novice nurses need to learn many new and vital practices within a very short period, and at the same time cope with a very demanding job. This fast pace of learning, and deficits in learning, were best described by a participant in Eraut's (2007) research as "trying to learn in a pressure cooker" (p. 127). Additionally, it was found in the same research, that many novice nurses often received negative feedback about what they had not done, rather than positive feedback for what they had done well. It was also found that the best method for learning for these novice nurses was coaching. However, as nurses are rarely released for this activity, support was usually given on the spur of the moment (Eraut, 2007).

The continuing awareness of knowledge deficits was apparent within Economising Learning, as beginning nurses first struggle to build the knowledge to be able to practise competently. The nurses came to realise later in their career, that they don't reach a plateau where they will know everything. As they progress in their careers, more is expected of them and practices change, hence they will be expected to undertake further learning. This is also dependent, however, on the extrinsic motivation provided by the work environment and the expectations the organisation places on their knowledge.

Awareness of the need to learn will bring about a degree of motivation to complete learning. Added to the awareness will be motivation, brought about by wanting to correct the lack of knowledge they see in themselves, or others see in them.

5.2.1.1 Educational current in relation to Connectivism

Learning that is taking place using information technologies and through networked learning communities is the basis of connectivism (Dunaway, 2011). Connectivism has come about due to the growth of technology in learning, and due to this, the increased speed at which knowledge becomes obsolete. With the increased availability of knowledge, informal learning has become an important part of our overall learning and learning is therefore viewed as a continual process (Siemens, 2005). This increased accessibility to information, has resulted in teachers being required to adapt their teaching approaches to suit this changing environment (Kop & Hill, 2008). The learning undertaken by students in a connected environment is cyclical with students accessing information from the internet, interpreting that information, and then sharing it to a network where they will again learn more information to modify their beliefs (Kop & Hill, 2008). By participating in this cyclical learning, learners are making connections between the different concepts, opinions and perspectives available to them, and from here build knowledge (Dunaway, 2011).

As part of the process of learning within connectivism theory is the importance of people finding the relevant sources of information that will meet the needs of their knowledge gaps. This includes the ability to also sort information for relevance (Dunaway, 2011; Kop & Hill, 2008; Siemens, 2005).

Educational current is a concept within the Theory of Economising Learning, which is important to nurses in regards to the amount of learning that they are exposed to. Siemens (2005) describes this concept as information flow in the theory of Connectivism:

> *Information flow within an organisation is an important element in the organisational effectiveness. In a knowledge economy, the flow of information is the equivalent of the oil pipe in an industrial economy. Creating, preserving, and utilizing information flow should be a key organisational activity. Knowledge flow can be likened to a river that meanders through the ecology of an organisation. In certain areas, the river pools and in other areas it ebbs. The health of the learning ecology*

of the organisation depends on the effective nurturing of information flow" (p. 7).

The Theory of Economising Learning adds to the Theory of Connectivism through further expansion of the cyclical nature of Connectivism Theory. Connectivism outlines the cycle as accessing information from the internet, interpreting that information, and then sharing it to a network (Kop & Hill, 2008). The Theory of Connectivism does not include the variation in how each individual will connect. The Theory of Economising Learning adds further dimension to this, through outlining the degree to which individuals will access the internet, and share that information to the network. Each individual will vary in how they connect according to how they balance their motivation against their personal resources. Some people will be more engaged (driven) and therefore search, interpret and feed back, whereas others will passively receive the information, and not feed back. Still others will not be connected and therefore are not accounted for in Connectivism Theory.

The more driven behaviours the nurses demonstrated, the more likely they were to engage in learning and search for information themselves. These nurses were more connected and therefore, fit well into Connectivism Theory. However, the nurses who were 'time poor' were more likely to rely on information that was sent to them. Searching for information was something that took time, whereas if the information was sent to them, they could then spend less time accessing quality information that was relevant to their practice.

It was different however with learning on the run. When learning on the run, nurses needed to be able to access relevant and reliable sites to obtain the information required to fill their knowledge gap. In this circumstance they needed to have the knowledge to determine the appropriateness of the information.

5.2.2 Balancing

5.2.2.1 Motivation

When researching motivation, it was found that what is obvious to the individual is not the entirety of what contributes to a person's motivation to undertake an activity, or continue with the activity. Therefore, the property of motivation in this research is enriched through applying aspects of theories from the discipline of psychology. Three theories have been focused on in regard to motivation: self-efficacy theory (Bandura, 1977), the theory of planned behaviour (Ajzen, 2002, 2011), and self-determination theory (Deci & Ryan, 2008; Gagne & Deci, 2005). Each of the aforementioned theories have been chosen due to previously being applied to nursing education with positive outcomes, as will be discussed alongside each theory. All three theories can be applied to various aspects of the Theory of Economising Learning.

5.2.2.1.1 Self-efficacy theory

Self-efficacy theory is described through four principal sources of information: performance accomplishments, vicarious experience, verbal persuasion, and physiological status (Bandura, 1977).

Performance accomplishments

Performance accomplishments are the rewards or punishments that people receive for their effort. These results are compiled by individuals over time, where at a given point they will have specific beliefs about the outcomes of their actions. As a result of previous experiences, individuals set goals and standards for themselves and create self-inducements to meet these goals or standards. When people's standards are not met, they will be dissatisfied until they meet their standards, therefore motivating themselves to complete activities to meet their goals or standards (Bandura, 1977).

For any activity, it is therefore proposed that people will have a belief regarding how their behaviour will result in certain outcomes. Their self-efficacy will determine how likely they are to initiate an activity and also their persistence in continuing to work at the activity until it is achieved. If people truly believe they have the skills to undertake and achieve an activity, they are

more likely to commence the activity, and more likely to persevere in that activity (Bandura, 1977).

Self-efficacy and outcome are, however, not related, as other issues, both intrinsic and extrinsic influence outcomes. People may not have the skills to complete the activity, even though they have a self-belief that they will. Given these other exceptions, their self-efficacy will have a major influence on if they undertake and complete an activity, given that they have incentive to do so and they have the skills. How the people achieve, in the current experience will also influence future activities (Bandura, 1977).

If people have had mostly successful outcomes with occasional failures, they will be more likely to have a greater self-efficacy, however, if they have mostly failures the opposite will be true. Their current self-efficacy will therefore be dependent more on the pattern of their past successes and failures. Once a person has a high self-efficacy in one area, it is then more likely that this will generalise to a higher self-efficacy in other areas. This is most likely in situations that are similar to where their self-efficacy has been improved (Lorsbach & Jinks, 1999). An individual's self-efficacy is able to be influenced by giving people strategies to undertake activities allowing them to have success, and therefore gain greater self-efficacy (Bandura, 1977).

Learning environments are personal, however the way a person constructs the learning is influenced by other people in a social setting, and also the cultural setting in which the learning is occurring. Consequently the nature of a learning environment depends on what happens in a given period of time, who is present when it happens, and the physical characteristics of the setting (Lorsbach & Jinks, 1999).

The concept of performance accomplishments resonates with the Theory of Economising Learning, where it was found that nurses have an expectation of themselves, and if this is compromised, they will be triggered to undertake further learning. This is affected by the position they expect to have within their work area and the knowledge they expect to have themselves. It is also affected by the care they expect to be able to provide to patients. Self-efficacy

108

could also give explanation as to why some nurses persist to a greater degree than others to overcome obstacles, to enable them to meet their expectations of themselves. The belief that they will have a positive outcome from undertaking educational activities also influences their behaviours. Once nurses have started to gain extra knowledge and have that knowledge reinforced through being acknowledged as nurses with greater knowledge, they will then have greater self efficacy. In turn they are more likely to achieve and search for more information in the future. The converse is true where nurses are not recognised, and receive no incentive for further education. In this circumstance they are not likely to undertake further education as there is no reward. This is demonstrated in Economising Learning, where nurses whose hospital supports staff to undertake extra study, are then more willing to add some of their own personal resources. This results with these nurses undertaking more study than those nurses in an unsupported environment.

The educator or hospital can be influential in improving a nurse's self-efficacy through applying the findings of Lorsbach and Jinks (1999). Self-efficacy is able to be developed in students, when they are able to work in well-structured environments with small incremental steps. This allows students to gain frequent success through undertaking and achieving these steps (Lorsbach & Jinks, 1999). These findings are applicable to the Theory of Economising Learning, where time as a personal resource was an issue for nurses. In applying Lorsbach and Jinks (1999) findings, it is proposed that small modulated activities should be developed for nurses. Through nurses being able to undertake small activities and complete them, their self-efficacy will be built, so that they then have a greater belief that they will be able to undertake further education and will have the time to achieve. This would need to be substantiated through further research.

Vicarious experience
It is not only through personal experience of success and failure that people develop self-efficacy, but also through viewing the experience of others. By seeing others performing activities that the individuals view as risky, they are then more likely to believe that if they persist and apply more effort, they are also more likely to achieve. A person is also more likely to benefit from seeing

a person struggling, but overcoming these struggles and achieving, than watching someone who has no issues in completing the activity (Bandura, 1977). It is vicarious experience that Washington and Moxley (2013) propose is at the "heart of social learning" (p45) in that individuals are able to visualise people who are powerful role models who have overcome similar difficulties, and therefore envisage themselves effecting the same changes through learning new ways of coping.

Vicarious experience would be applicable in the Theory of Economising Learning within a positive work environment, where staff are able to view positively motivated nurses overcoming obstacles. Others would see these positively motivated nurses using strategies such as multitasking, staying connected and catching time to identify strategies and become aware of possibilities to undertake learning.

Verbal persuasion

Verbal persuasion is not as altering as personal experience or vicarious experience as the person will not have the authentic experience to match to the situation. For verbal persuasion to be effective, people will also need to be supported with aids to help them achieve. If provided with this support, they are then more likely to supply greater effort to achieve the desired outcomes (Bandura, 1977).

Verbal persuasion resonates with the Theory of Economising Learning. It was found that nurses are more inclined to undertake further learning when they are not only encouraged verbally but given support and resources to undertake the learning.

Physiological status/ emotional arousal

People will have a state of emotional arousal for any situation that informs them of their anxiety and vulnerability to stress. The person is more likely to expect success when they do not have heightened levels of stress, as heightened levels of stress usually inhibits their performance (Bandura, 1977). When people have a fear reaction it could also generate, through anticipatory self-arousal, a further fear of impending stressful situations. This emotional arousal is able to be altered in the person through modelling where the person

is able to experience success, and therefore decrease the levels of emotional arousal connected to an activity (Bandura, 1977).

Physiological status / emotional arousal explains the effects of workplace culture on the nurses' further education. In the Theory of Economising Learning nurses often learnt through consulting with colleagues. If these relationships are strained the likelihood of the nurse seeking advice will be diminished. The nurses' previous experience with further education will also impact on the nurses likelihood of undertaking further education.

Previous application to nursing education

The theory of self-efficacy has been applied to nurses in a variety of settings. It has been shown that nurses build self-efficacy not only from their personal experiences but from the experience of others within the clinical setting. Nurses build their belief of their own abilities in their work, by successful attempts at undertaking various nursing skills. Nurses' self-efficacy is also influenced by their theoretical knowledge (Alavi, Bahrami, Zargham-Boroujeni, & Yousefy, 2015).

Teachers impact nurses' motivation through the feedback they provide to them as students. A teacher is able to build self-efficacy through giving constructive feedback, thus helping the student to develop into a registered nurse (Rowbotham & Owen, 2015). Through the knowledge gained from learning experiences, nurses can increase their ability and therefore their feelings of self-efficacy and the nurse's overall performance (Alavi et al., 2015). Knowledge and the maintenance of knowledge could therefore be seen as crucial to a nurse's development and consequently patient outcomes. Lee and Ko (2010) support these findings and in addition found that the self-efficacy of the work unit is indicative of the individual's performance. Work units where regular education was occurring showed higher self and group-efficacy and greater unity among the nurses (Lee & Ko, 2010).

Discussion of self-efficacy theory in relation to Economising Learning

Although emotional arousal would be active within continuing nurse education, it is vicarious experience and verbal persuasion that is most seen in the Theory of Economising Learning. Not only do nurses undertaking further learning raise the expectations of the work area, they also enable less inclined nurses to have vicarious experience of learning and achieving in the workplace. The

nurses who display driven behaviours towards learning are also frequently, either more generous or strategic with their personal resources, thus modelling this behaviour as coping mechanisms to other staff. If nurses are able to see, through another nurse's experience that their behaviours are rewarded and that they are able to undertake further learning through various behaviours, they are also more likely to undertake these behaviours.

Verbal persuasion, as stated by Bandura (1977), is more likely to have impact on the output rather than self-efficacy. Supplying the person with aid to support the verbal persuasion is also considered to be paramount in the success of the individual. Therefore in this research, it is the support that people receive to enable them to combine continuing education into their life, that will have the most benefit. One such aid would be driven nurses sourcing relevant materials and supplying these materials to other staff. In such an instance it would be a combination of vicarious experience where the nurse is seeing other staff undertaking these activities, the verbal persuasion of others talking about doing the readings or activities, and then the supply of relevant materials that saves time and resources for the nurse. The vicarious experience could possibly extend to the skills of being able to search for materials, which the nurse may not currently have. This results in staff that would otherwise not have the self-efficacy to apply best practice, and may have a negative emotional arousal to undertaking further learning, being able to learn in a supported environment. This would consequently improve self-efficacy, that will further enable them in their future career.

The negative effects of self-efficacy theory also need to be considered with nurses. Bandura (1977) asserts, that those who view themselves as inefficacious, tend to visualise themselves at failing and thus build failure scenarios and expect things to go wrong. They will therefore have low motivation to undertake these activities.

These circumstances will frequently arise in postgraduate education as nurses find that they are unable to allocate the time required for learning, travel to where the education is located, be released to attend education, or receive assistance in paying for education. In these circumstances, they will build a

belief that they are unable to undertake education and give up trying. If this is the case nurses will then need to have many successful undertakings in education to then believe they are capable and be positive about undertaking education. Lack of personal resources also impacts negatively on a nurse undertaking learning.

What has been added to self-efficacy theory from this research is that the amount of personal resources the nurse has to input will also impact on when the nurse will undertake further education. This is alluded to in self-efficacy theory, however, it is explicit in the nurse's decision making in Economising Learning. It was apparent in the Theory of Economising Learning that nurses balance the benefits of the outcomes of learning with the expected input of personal resources.

Self-efficacy theory supports many aspects of the Theory of Economising Learning. It also adds explanation as to why nurses are behaving in the way they are. There are aspects of self-efficacy in the following theory of planned behaviour. Ajzen (2002) states that self-efficacy and perceived behavioural control are similar. There are, however, other aspects to the theory of planned behaviour that set it apart.

5.2.2.1.2 Theory of planned behaviour

Figure 5-1 Theory of planned behaviour
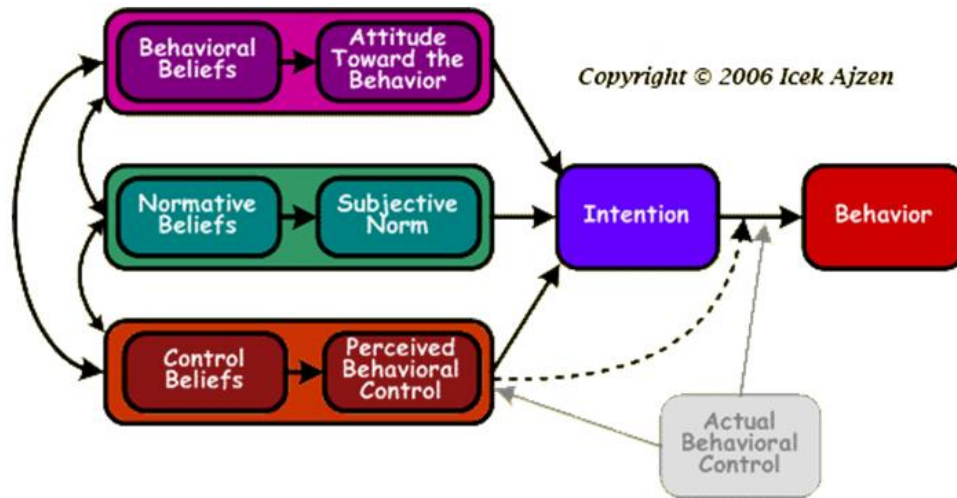
(Ajzen, 2006)

The theory of planned behaviour was developed from the theory of reasoned action. Perceived behavioural control was added to the aforementioned theory to account for circumstances outside of the individual's control (Ajzen, 2002, 2011). The theory aims to explain human behaviour not just predict it, and includes in this explanation extrinsic factors that will impact on the individual's ability to undertake and succeed in a behaviour (Ajzen, 2011).

The theory of planned behaviour as visioned in the above diagram (Figure 5-1) has three areas it deemed as important in guiding behaviour: Behavioural beliefs, normative beliefs and control beliefs (Ajzen, 2002). These three areas will now be discussed along with how they have been applied in other research.

Behavioural beliefs are what the person believes will be the consequences and outcomes of behaviours and if that behaviour will be desirable or undesirable to them (Ajzen, 2002, 2011). As represented Figure 5-1, behavioural beliefs will then impact on whether the person has a positive or negative attitude towards the behaviour (Ajzen, 2002).

Normative beliefs are what the person believes are the expectations of other people. These beliefs will then result in the perceived social pressure to perform the behaviour or subjective norm (Ajzen, 2002).

Control beliefs refer to how difficult the person perceives it will be to perform the behaviour, and the presence of factors that may assist in the behaviour or be obstacles to the behaviour. These beliefs then give rise to perceived behavioural control, which is the difficulty people perceive they will have in undertaking the behaviour. This ease or difficulty need not be their own beliefs, but may also be the beliefs or experiences of others, in regard to the availability of the resources or opportunities they will need to undertake the behaviour (Ajzen, 2002, 2011).

The required resources that people are likely to consider are such things as time, money, skills and co-operation of others as well as other obstacles. If they believe that they have the required resources and that the obstacles will not be too great to impede their success, they should exhibit a high degree of perceived behavioural control (Ajzen, 2002, 2011).

People's attitude towards behaviour, subjective norm, and perception of behavioural control, forms their behavioural intention. If people have enough actual control over the behaviour, it is expected that they will carry out this intended behaviour, if they are given the opportunity to do so. Therefore it is best to consider perceived behavioural control, as well as intention, as there are many factors that may impact the execution of behaviours (Ajzen, 2002).

Consistent with this line of reasoning, perceived behavioural control in the theory of planned behaviour, refers generally to people's expectations regarding the degree to which they are capable of performing a given behaviour. Additionally, it is the extent to which they have the requisite resources and believe they can overcome whatever obstacles they may encounter (Ajzen, 2002).

As can be seen, self-efficacy and perceived control are distinguishable from each other. They are, however, dependant on each other in determining where a person will be situated with perceived behavioural control (Ajzen, 2002).

Previous application to nursing education
This theory has been used within nursing to predict behaviour. One such study used the theory to improve the use of manikin simulation in classes by

university lecturers (Jones, Fahrenwald, & Ficek, 2013). The pre-test, post-test design measured each of the three areas: attitudes, subjective norms, and perceived behavioural control, both prior to the intervention and after the intervention. The intervention included a two-day workshop aimed at strengthening the lecturer's attitudes, building a sense of behavioural control, and communicating social norms that were supportive of using high fidelity simulation manikins (Joneset al., 2013). As a continuing influence, the study impacted behavioural beliefs, behavioural control and social norms by introducing simulation experts to support staff throughout the year. By targeting these three areas, the study was able to measure a positive impact, with the most impact measured with perceived behavioural control. A follow on from this project that also impacted on future outcomes was the evolution of 'simulation cheerleaders' who in turn have assisted other faculty members in using high-fidelity simulation manikins (Jones et al., 2013).

The theory of planned behaviour has also been used in improving nurses' pain management with cancer patients. The project conducted by Gustafsson and Borglin (2013) measured the registered nurses' (RNs') knowledge and attitudes to pain relief at four and twelve weeks after an intervention. This intervention was also in the form of a workshop, targeting the three areas of attitude where they discussed, as a group, the benefits of adequate pain control for the patient. They also discussed positive and negative attitudes within case studies (Gustafsson & Borglin, 2013). In regard to subjective norms, the director of the surgical department and the ward sister both declared their support for the proposed interventions, as well as the workshop, therefore espousing support for the desired behaviour. Behavioural control was influenced by providing RNs with pocket-sized guidelines for pain control as well as introducing daily systematic pain control for all patients with cancer pain. This study found that there were positive changes in the RNs' knowledge and attitudes at four weeks (Gustafsson & Borglin, 2013).

Other research used the theory of planned behaviour to predict nursing staff blood pressure monitoring behaviours. This study found that although a large amount of resources were invested in teaching staff in blood pressure

116

measurement techniques, knowledge was in fact a poor indicator of compliance. The study found that social norms and perceived control were far more important in predicting behaviour than knowledge in this instance (J. M. Nelson, Cook, & Ingram, 2014). Ajzen and colleagues (2011) reviewed four studies in different areas with all finding the same results that knowledge is not a predictor of behaviour.

In developing the Theory of Economising Learning, it was found that mandatory training is disruptive to nurses undertaking education within their personal curriculum. Therefore in changing work behaviours, organisations need to influence behavioural beliefs, normative beliefs and control beliefs rather than relying on education alone to influence change.

Discussion of the theory of planned behaviour in relation to Economising Learning
The theory of planned behaviour strongly supports the Theory of Economising Learning. In regard to behavioural beliefs, nurses will be influenced by behavioural beliefs when they are balancing personal resources against the desired outcome. As proposed in the theory of planned behaviour, people's beliefs about the likely outcomes of the behaviour, or in this case education, and the benefit it will have for them is highly influential in their undertaking the behaviour (Ajzen, 2002, 2011).

Is the learning worth the investment compared against their personal curriculum? This is a question nurses will ask when balancing value against personal resources. This is described in the theory of planned behaviour as control beliefs, where the nurse will specifically be balancing the resources of time, money and support from others in determining if they believe they will be able to allocate the resources needed for the learning. In developing their personal curriculum, nurses will be influenced by their behavioural beliefs. Nurses have predetermined attitudes to the value of the learning in their organisation, which will reflect their learning experiences in the past and their experience with the support that they will be given from the organisation. In regard to normative beliefs nurses will also be influenced by the culture of the organisation they are working in. This is reflected in the Theory of Economising Learning through the use of digital technology, where it is shown

that nurses' balancing is able to be disrupted by there being nurses displaying driven behaviours in the organisation, as these nurses will raise the expectations of knowledge within the work environment. The organisation is also able to influence the control beliefs by supporting learning through financial means and through support from management within the organisation.

5.2.2.1.3 Self-determination theory

Self-determination Theory examines motivation through the lens of intrinsic and extrinsic motivators. Self-determination Theory is based on three basic needs of humans for psychological health, namely competence, autonomy and relatedness. Intrinsic motivation or autonomous motivation is when people engage in an activity totally of their own volition and because they enjoy that activity. Extrinsic or controlled motivation is where the person feels some pressure to undertake an activity and do so because the behaviour will have a desirable consequence (Gagne & Deci, 2005). For people to be autonomously extrinsically motivated, they will relate to the value of a behaviour for their own self-selected goals. They will then feel greater freedom and autonomy as it will correlate with their own personal goal and identity (Deci & Ryan, 2008; Gagne & Deci, 2005).

Integrated regulation is when something is seen by individuals to be essential to their personal goals. Integrated regulation shares characteristics with intrinsic motivation and both compromise autonomous motivation. Integrated regulation, however, is not intrinsic, as the person does not find the activity interesting. Therefore, although closely aligned with intrinsic motivation, integrated regulation remains extrinsic motivation (Gagne & Deci, 2005).

Relationships and connectedness to others is important to people, and if their behaviours are rewarded by allowing them to be part of the group, then the behaviours will be internalised as important to the person. For the behaviours to be further internalised, the person needs to also have autonomy (Gagne & Deci, 2005).

Integrated regulation is able to be identified with the Theory of Economising Learning, where nurses' personal curricula will grow in regard to what they see as being important to function within the environment in which they are

working. The knowledge may not be of personal interest to them, however, as a nurse working within that area, the knowledge will be regarded as knowledge a competent nurse will need to have. The learning will therefore be extrinsically motivated, but, will be valuable to them personally due to the expectations of the organisation.

For the behaviour to be intrinsically motivated, nurses would need to get pleasure from the learning experience. This is true to some degree with some nurses, in "expectations of self", as they actually enjoy the experience of learning or are passionate about the topic they are learning about. Intrinsically motivated nurses would be positively motivated to learn, as they find ways to overcome any shortfall in personal resources. These nurses would then pass the information onto others, which would in turn motivate them extrinsically, as they then will have a higher expectation of themselves, and need fewer resources to undertake the learning.

Controlled motivation is influenced by the extent to which people are forced or coerced by external factors into undertaking a behaviour (Gagne & Deci, 2005). People will adopt extrinsic goals when their needs of autonomy, competence, and relatedness have been thwarted. However these goals will be a substitute for their intrinsic aspirations, and will 'crowd out' their personal aspirations, therefore, affecting personal wellness (Deci & Ryan, 2008).

Positive work climates will address the three basic physiological needs to enhance the people's intrinsic motivation. The organisation will also enhance the person's internalisation of extrinsic motivation. This will have positive effects on behaviour change and improve the work outcomes of the organisation. People will also be able to display greater creativity and have greater work satisfaction and therefore be a positive organisational citizen, while having good psychological well-being (Gagne & Deci, 2005). The organisation can, however, contribute to amotivation.

Amotivation means that people do not have motivation to undertake an activity. The organisation can influence amotivation through the work climate not meeting the needs of competence, autonomy and relatedness; however,

119

individuals also will have differences in causality orientation (Gagne & Deci, 2005). An individual's causality orientation is expressed as 1) autonomous orientated where they perceive social contexts as supportive and are self-determined; 2) controlled orientated where they perceive they are controlled and 3) impersonally orientated where they have a tendency to be amotivated (Gagne & Deci, 2005). When staff are amotivated, the results of their behaviours are more likely to be maladaptive (Vallerand, Pelletier, & Koestner, 2008). This could be significant in the health sector in relation to patient safety.

Amotivation is demonstrated in the Theory of Economising Learning, in negatively motivated nurse's behaviour, and is when the value of learning is outweighed by the cost of personal resources. It is also demonstrated in the organisation, where there is too much controlling of learning. This is characterised by the organisation having too much mandatory training, causing the individual nurse to be unable to accurately build their personal curriculum. This lack of autonomy results in nurses struggling to meet the organisation's requirements, which takes personal resources away from what the individual determines is important to their maintaining competence. The amount of mandatory training, therefore, needs to be assessed, as to if this then compromises the nurse's competence.

Previous application to nursing education

Self-determination theory was used by Minicucci, Schmitt, Dombeck, and Williams (2003) to develop a nurse-led intervention with smokers. In doing so, they provided further explanation of the theory. People themselves also have beliefs that are autonomous or controlled. If people are more oriented to autonomous causality they will function in self-determined ways and be guided by information. These people will see behaviours as being initiated and regulated by themselves. People who have a controlled orientation will see the behaviour as originating and being regulated outside of themselves. These people will not be able to identify a connection between their behaviour and negative outcomes (Minicucci et al., 2003). It is theorised that people will have some degree of each of these behaviours. How people are inclined will have an impact on how they see the situation as being autonomous or controlled (Minicucci et al., 2003). Therefore, it is hypothesised that it is not so much the

environment, but more how the person is viewing the environment that matters. It is therefore important that people be supported psychologically to allow them to feel competence, relatedness and autonomy towards a given task so their motivation is optimal to engage in the task (Minicucci et al., 2003).

It is important when determining which motivation will impact outcomes, to firstly determine the nature of the task. When the task is dull, self-determined forms of motivation will be the most important in order to lead to high performance. It was found in the smoking cessation research, that nurses who brought more of themselves to the care of the patient, were seen as being more interested and sensitive and consequently more effective (Minicucci et al., 2003).

Similarly, findings from research conducted with Estonian nurses found that the nurses who shared values with the hospital they worked in, found their work more meaningful and were therefore more likely to be self-directed with their work (Toode, Routasalo, Helminen, & Suominen, 2014). This research is also complementary to the Theory of Economising Learning, as it is what is important to an individual that makes them more likely to engage in learning. Concepts within self-determination theory are therefore important to consider, when organisations are determining how to build a positive environment for learning to occur.

Although there are elements within each of the motivation theories discussed, no one theory wholly represents the behaviours of nurses in regard to Economising Learning. Each of the above theories, however, does provide support to the various behaviours that have been identified within this theory. The application of these theories is important in assisting the organisation to improve the organisational culture, and in turn, nurses' engagement with learning.

5.2.2.2 Personal resources

5.2.2.2.1 Time
Time was introduced in the background of this thesis as being a barrier for nurses undertaking professional development (Coventry et al., 2015; Haywood

et al., 2013; Katsikitis et al., 2013). The findings within the Theory of Economising Learning were similar with nurses undertaking learning within their leisure time. The nurses within this research were taking advantage of small amounts of leisure time or multitasking to achieve learning outcomes.

As discussed in chapter 2, it has been found that heavy workloads, and insufficient staff, or insufficient skills mix, means that nurses are unable to undertake learning within work hours (Coventry et al., 2015). This means that nurses need to undertake learning in their personal time (Dowswell et al., 2000; Thoidis & Pnevmatikos, 2014). As has been found in the Theory of Economising Learning, this cost of personal time, is then weighed against the motivational issues for undertaking the learning.

Various researchers have explored where nurses will then find time within their personal lives to undertake learning. Dowswell and colleagues (2012) found that undertaking learning was often to the detriment of the nurses' families. This made participants with families less likely to view continuing education in a positive light. The authors proposed that if staff needed to attend training in their own time, or fund it themselves, a large proportion of the workforce would be disadvantaged. This contrasted with Thoidis and Pnevmatikos (2014) who found that rather than taking time away from other activities, nurses used their personal leisure time for learning.

Although learning is rarely undertaken within work hours (Dowswell et al., 2000; Thoidis & Pnevmatikos, 2014), many nurses view continuing professional development as a shared responsibility (Katsikitis et al., 2013; Thoidis & Pnevmatikos, 2014). Learning activities that people undertook within their free time, were activities that they considered to be important to their well-being. Participating in learning during their free time also impacted on the availability of that time to be used for other leisure activities (Thoidis & Pnevmatikos, 2014).

This impact on nurses' personal time increases the importance of learning being of value to them. Learning should also be available in the organisation,

and opportunities created for learning to be achieved in work time. This would therefore decrease the demand on the nurse's valuable private time.

ELearning has been found to assist with time management, by reducing the amount of travel and time away from work and also giving greater flexibility in times people can access the learning (Heartfield et al., 2013). Travel and time away from work were indicated by the nurses in the Theory of Economising Learning, as an issue with engaging in learning. This was an issue, especially in rural areas where nurses need to travel longer distances and therefore need to be away from work for longer periods of time to undertake education. This finding was similar to that of Schweitzer and Krassa (2010), who found in a literature review, that nurses in rural areas had greater difficulties due to cost and staffing issues. Heartfield and colleagues (2013) ensured that staff were able to access the materials even when there was limited access to internet and with limited hardware, by downloading modules to mobile devices.

5.2.2.2.2 Finance

The high cost of learning is well documented within the literature (Griscti & Jacono, 2006; Heartfield et al., 2013). Nurses within this research highlighted the cost of learning as a personal resource that needs to be balanced against motivation. Interestingly, Queensland Health staff did not raise this as an issue, however, as part of their employment terms they receive money for education.

According to an Australian study, nurses in 2013 spent on average $30 per CPD hour. This did not include the mandatory training that accounts for some of the nurses' CPD hours each year, therefore this amount would actually be higher than reported (Heartfield et al., 2013). With the number of nurses in Australia, this equates to a multi-million dollar industry. Therefore, there are many companies either providing CPD as a core business or as an adjunct to a core business including AUSMED, TAFE, The Australian College of Nursing, CQ Nurse, Australian Nursing and Midwifery Federation, NSW Nurses Association plus some universities and other organisations (Heartfield et al., 2013).

The actual cost of e-learning, according to these authors, is anywhere from $30 per hour up to hundreds of dollars for continuing training. They also report on

companies who offer membership for training which starts at $150 per year. In contrast to this are face-to-face learning opportunities which range from $60 for a short session through to $200 for a day's education and as high as $1000 for some international conferences. Added to these costs are the additional costs of parking, accommodation, child minding and transport when undertaking face-to-face courses. An added barrier to face-to-face courses was being released from work to attend the course (Heartfield et al., 2013).

Similarly, it was found in the Theory of Economising Learning, that it was not only the cost of the actual course when attending face-to-face education, but also the costs of attending, such as travel, accommodation, and organising child care. Being released from work to attend training was also difficult, especially for rural nurses, who could often not be replaced for them to attend training. When balancing, the nurses within this study, especially the more experienced nurses, did not value the time and money spent on face-to-face learning, as they believed the investment outweighed the gain from their attendance. They preferred to engage in more targeted learning to make the most efficient use of their time.

It is proposed in this research that cost is an inhibiting factor in nurses continuing education and may, as found in the Theory of Economising Learning cause nurses not to engage in learning (Cochrane, 2012). However, it has also been found that nurses are willing to share the cost of education with their employer (Katsikitis et al., 2013).

5.2.2.2.3 Learning environment

The learning environments in this study are unstructured and were previously not considered a learning environment due to this lack of structure. This change, has occurred in recent years with the advent of web 2.0 technologies. These technologies have allowed the student to learn through eLearning in any personally suitable environment. Learning environments are changing at a rapid rate as the technologies, and therefore possibilities, have advanced. People themselves are also finding new and inventive ways to use the technologies to enhance their learning, therefore, again progressing possibilities (Billett, 2004; Torres Kompen et al., 2015).

The organisational learning environment historically was considered weak pedagogically, however, with further research it has been found to be a valuable source of learning (Billett, 2004). Organisational learning is often being conducted simultaneously to learning within educational institutions, however, it is the organisational learning that is central to the organisations requirements and to the ongoing practices within the organisation (Billett, 2004). In support of these 'alternative' learning environments other than the classroom, it has been found that students undertaking eLearning have the same outcomes in regard to grades as those in the traditional classroom. The instruction itself is more important to learning outcomes than the environment in which it occurs (Wells & Dellinger, 2011).

In the Theory of Economising Learning, nurses identified the mobility of learning as invaluable. The nurses, through the use of web 2.0 technologies and mobile devices, were able to learn in any environment. This enabled the nurses to take advantage of time through multitasking, catching time, and staying connected. In undertaking learning activities using mobile devices, the nurses either needed constant or at least intermittent internet access.

As outlined in chapter 2 of this thesis, although there has been a significant increase in the areas the internet can be connected to, there remains a proportion of the public who do not have access to the internet (Australian Bureau of Statistics, 2014). This supports the findings of this study where not all nurses had access to the internet at home, or that some had intermittent access due to their location. Lack of internet access, or intermittent access, impacts on where and how the nurse is able to engage in learning.

5.2.2.2.4 Knowledge

Each person will bring a unique combination of knowledge to learning. Eraut (2000) defines personal knowledge as "the cognitive resource which a person brings to a situation, that enables them to think and perform. This incorporates codified knowledge, in its personalised form, together with procedural knowledge and process knowledge, experiential knowledge, and impressions in episodic memory " (p. 114). Billett (2008) notes that individuals will bring their previous culturally derived beliefs and apply them to the current situation. It is to each situation that the person will renegotiate their previous experience,

as people make sense of and remake old practices to subsequently deploy them. With each new experience, people will again make sense of it and practise it according to how they understand it in relation to their previous knowledge (Billett, 2008). The organisation will also have a changing group of individuals who will bring their own distinctive learning history, and will be better placed in some situations than others (Eraut, 2004).

The Theory of Economising Learning has found that each nurse is unique in what they bring to a situation and it is this uniqueness of the individual and their prior knowledge and experiences that will predict their learning behaviour. Eraut (2000, 2004) and Billet (2008) therefore add to the Theory of Economising Learning and support the assertion of this research that each individual nurse will have unique learning needs, and will have different outcomes from each learning experience. Learning opportunities, therefore, need to be flexible in how they are delivered and be provided in a way that allows the nurse to be able to take the learning they need for them as an individual to meet their competency requirements.

Mentoring and coaching is considered important for new graduate nurses. Although formal mentors are usually allocated to the new graduate, it is often not this mentor who will give the support. Beginning nurses will seek guidance and learning from whoever is available to them when the need becomes apparent (Eraut, 2004). This was apparent in the Theory of Economising Learning, as beginning nurses discussed learning on the run, by approaching a more senior nurse for guidance. Often this was the nurse who was in charge of the shift who could vary from shift to shift. They also mentioned receiving guidance on the run from facilitators of the unit where they worked. Beginning nurses also gained knowledge from policies and procedures and from text books which as stated by Eraut (2004), are available to all staff.

Once nurses finish university, they are able to practise autonomously as a registered nurse. However, as the beginning practitioner enters the workplace they become aware, if they were not before, that they have a lot of learning left to do to be able to practise independently in the work environment. This is discussed by Mulvey (2013), who suggests that a qualification is not a point of

arrival but is more akin to being a point of departure. It is as the people practise that their competence will grow, and with this competence will be the realisation that there are gaps within their knowledge. People will also have the realisation that their knowledge base is in fact dynamic rather than static and will be continually evolving (Mulvey, 2013). The Theory of Economising Learning supports these findings, as the nurse becomes aware that competence is not a point they will arrive at, but instead results from continuous learning.

Patricia Benner has discussed in her theory of Novice to Expert (Benner, 2001) how a nurses existing knowledge relates to experience in nursing.

Patricia Benner is a well-regarded researcher and theorist in nursing. Her theory of Novice to Expert is based on the work of Stuart Dreyfus and Hubert Dreyfus. Benner states that the Dreyfus model proposes that a student will pass through five stages of skill proficiency: novice, advanced beginner, competent, proficient, and expert (Benner, 2001).

Novice nurses have no experience to base their practice on, instead they base their practice on the rules they have been taught. This makes the novice's practice limited and inflexible. The rules, although guiding practice, do not give guidance to the novice about which is the most appropriate action in a given situation. Benner proposes that a novice is not only a newly graduated nurse, but also a nurse who is new to an area (Benner, 2001).

Advanced beginners have marginally acceptable performance as they have some experience with real life situations. At this stage, nurses have enough meaningful experience for instructors to be able to leverage this experience and enable them to situate the information they provide. These nurses work at recognising aspects of patients that represent normal and abnormal and need to be backed up by more experienced nurses (Benner, 2001).

Typically competent nurses have been working in the area for two or three years. Competent nurses are able to plan care and prioritise the order of the care. They base their planning on their "conscious, abstract, analytical contemplation of the problem" (Benner, 2001, p. 26). At this stage, the

127

planning is deliberate, enabling them to have mastery of the clinical area, and allowing them to achieve organisation and efficiency (Benner, 2001).

Proficient nurses base their actions looking at the situation as a whole. Their proficiency is also based on considerable experience. By looking at the situation as a whole they are more able to fluently manage situations. This nurse is best able to learn through case studies where they can be challenged. Given their ability to view the situation as a whole, they do not respond well to being given rules to follow as they are more likely to cite examples of where these rules would not be appropriate. These nurses will likely have been working in an area for three to five years and are the nurses most likely to recognise a deteriorating patient (Benner, 2001).

Expert nurses work more intuitively than other nurses and are basing their care on their many years of experience. They are able to view the total situation as a whole and are able to pinpoint the issues without wasting time on extraneous data. They will not always be able to explain the reasoning behind all of their decisions, and give explanations such as 'because it felt right'. It should be noted that they have been basically studying by being in the area for many years and therefore will have knowledge, based on this experience and education over time. These nurses are able to provide support and mentoring for more junior nurses, who will respect their knowledge in the area (Benner, 2001).

Critics of Benner's theory (2001) believe that the theory is too simple and does not account for the individual nurse (Gobert & Chassy, 2008; Lyneham, Parkinson, & Denholm, 2009). Alternatively, it is viewed by some as valuable to the nursing profession but seen as a philosophy rather than a theory (Altmann, 2007). The theory is criticised due to the research being qualitative and being biased towards the positive due to her approach to questioning. Benner adopted the five stages of the Dreyfus model directly after interviews with 120 nurses; therefore Benner believes that her theory has been tested (Altmann, 2007). It must be noted that the cited articles critiquing Benner's work are discussions only and further research would need to be conducted to substantiate the criticisms and possibly extend her theory.

In relation to the Theory of Economising Learning, Benner's theory of Novice to Expert is useful in its application to learning. These categories of nurses are seen within the data collected for the Theory of Economising Learning, as the nurses discussed the types of learning they prefer and their frustrations with the different learning methods. For example, an expert discussed being frustrated with face-to-face education as it took too much time, and they needed to sit through the questions of other people that were not relevant to them. Novice nurses in comparison, liked to have face-to-face learning as they wanted to ask questions as they had little experience to base the learning on. The assertions of Benner's model, together with this research, suggest that learning should be developed to enable learners of different experience levels to target their learning to their individual needs. It was found in this research that the individual nurse does not sit wholly within one stage of novice to expert, and will vary due to their experience and interest in a particular area. Therefore, to use Benner's theory in relation to the Theory of Economising Learning, the five stages need to be used in a fluid manner as the individual nurse could belong in multiple stages at the same time depending on the learning opportunity. The uniqueness of an individual is an important consideration for learning.

5.2.2.3 *Balancing Strategies*

5.2.2.3.1 Digital technologies

The literature does not clearly articulate how people save time during learning by using mobile technology or eLearning. It does, however, show in multiple articles that mobile learning allows people to learn anytime and in any place and therefore allows nurses greater access to learning resources (MacNeill, Telner, Sparaggis-Agaliotis, & Hanna, 2014; McLoughlin & Lee, 2009; Ousey & Roberts, 2013). The literature also shows that eLearning has the ability to increase accessibility, improve cost effectiveness, and to standardise content (Brunero & Lamont, 2010).

eLearning is purported to have advantages such as cost-saving due to learners not needing to travel to learning opportunities and having a greater flexibility in regard to time and delivery restraints. There are, however, some barriers to

nurses learning via eLearning due to the digital literacy levels of staff and access to computers in the workplace (Clarke, Lewis, Cole, & Ringrose, 2005). Although literacy was not found to be an issue with the majority of staff in the Theory of Economising Learning, it remains an issue for some. It is therefore imperative that learning be available in different modes to ensure that all staff have access to learning.

eLearning offers numerous opportunities for staff as there has in recent times been an explosion of information available through the internet. By nurses taking advantage of free medical sites and databases, they are able to negate some of the barriers to learning, including financial and demands on personal time. It is therefore necessary for nurses to have an awareness of the many government-based and university-based sites that are considered to be more evidence-based. This knowledge, it is suggested, could be introduced in nursing schools (Dee & Reynolds, 2013).

The affordances of online technologies allow students to be increasingly self-directed in their learning. As the world is now changing, with people having diverse life trajectories and social mobility, as well as having multiple career paths, it is important that pedagogy reflects this. To enable people to meet their own goals and needs they need to be co-authors of their learning and be active participants to ensure their needs are met. In this collaborative learning process, the educator also needs to ensure that students receive adequate scaffolding and structure to meet their needs. as well as curriculum needs (McLoughlin & Lee, 2009).

It was found within the Theory of Economising Learning that each nurse requires different amounts and depth of learning, to gain the knowledge needed to maintain competence. Therefore, developing learning opportunities that allow nurses to determine the depth and aspects of the learning, would allow nurses to make best use of their time while being adequately supported and challenged in their learning.

Web 2.0 technologies also add to this co-construction of the learning environment. Through these technologies, people from diverse areas are able to

work in groups to solve issues and increase learning. For this diverse group, eLearning also increases motivation by working with others, and needing to be prepared for the meetings, allowing for a richer learning experience. The disadvantage, however, is that group eLearning still requires the learners to be available at the same time to meet and is also resource intensive (MacNeill et al., 2014; McLoughlin & Lee, 2009).

These group activities would be of benefit to participants in the Theory of Economising Learning research, especially those who are isolated from others with similar learning needs. As suggested, however, the disadvantage is that it is resource-intensive. Many isolated nurses have poor or intermittent internet and although this type of learning would be of great benefit to them, they could not reliably meet with others within the group.

Within the Theory of Economising Learning research, it was found that nurses frequently searched for information, especially at the point of care, while learning on the run. As this learning is going to be directly applied to the patient, it is critical that nurses have the ability to discern information from reliable sources. Some nurses within this study had reputable sites that they referred to on a regular basis, and that were well known within their unit. This knowledge, however, was gained in the work environment. Given the necessarily large learning curve of the new graduate, the author considers it would be pertinent for the nurse to have skills to discern appropriate information, and be aware of reliable sites, prior to graduating from university.

Research conducted in Canada with pharmacists, nurses, and physicians, found benefits when these staff were given access to a recommended online resource. The site was chosen as it provides evidence-based treatment recommendations, which have been authored and reviewed by Canadian medical experts, and are widely used by family physicians and pharmacists in Canada. It is continuously updated and published by a not-for-profit professional organisation (Pluye et al., 2013). All participants in the research believed the information from the site was relevant to their needs. The participants stated that they learned something new from the information, were reminded of things they had forgotten or were reassured by the information. The site also had some

influence on management of patients and in patient outcomes (Pluye et al., 2013).

Findings were similar in the Theory of Economising Learning as the participants discussed using their mobile phones for learning on the run. Often mobile phones were used to seek information to reassure the nurse that they were undertaking a procedure correctly and also to reassure them if they had not come across something for a while and needed to be reminded. In the case of medications, nurses within this study often looked up drugs they were not aware of and also medical conditions and procedures they did not have previous experience with. There was a difference in this study between novice nurses and more experienced nurses with the depth of knowledge they required, with novice nurses needing more in depth information. Recommended sites for nurses to use within the ward situation and also at home would therefore be a valuable asset to hospitals to ensure that the sites nurses are accessing contain best practice.

The amount of information available to people and their access to it has been increased through advances in technology. Education requires a degree of communication between the educator and the learner and with the advances in technology the reach of this communication has grown (Kresevic et al., 2011).

This access to communication in real time was valuable to some in the Theory of Economising Learning, however, there are also a group of people within Australia who have limited access to the internet to take advantage of the instant feedback that it has the opportunity to provide. This was overcome by Brunero and Lamont (2010) who offered learning packages to nurses regarding 'difficult patients'. They provided the packages to libraries in a CD format and also made the packages available via the organisation's intranet and the internet. As the packages were scenario-based, feedback was written into the script based on the nurse's responses to situations. This learning was shown to reduce nurses' stress when dealing with the 'difficult patient' (Brunero & Lamont, 2010).

ELearning should not be considered in isolation. MacNeill and colleagues (2014) state that eLearning is most suitable for simple, repeatable and contextual tasks. This type of learning is more able to focus on the learning goals of individuals; however, the risk with people learning in isolation via eLearning is the isolation and risk of loss of motivation. They believe that for these reasons eLearning is better as a component together with other forms of learning (MacNeill et al., 2014). Howatson-Jones (2004) also supports this view stating that in designing a course, cultural backgrounds and socioeconomic positions, as well as the learning styles and diversity of needs, should be taken into account so that no group is disadvantaged. He promotes a hybrid approach to courses and proposes that nurses should be consulted regarding the design of courses (Howatson-Jones, 2004).

The nursing workforce in Australia is ageing, however, it is now predominately made up of Generation X (born between 1961 and 1981) and Millennials (between 1982 and 2002) with some remaining baby boomers (Ousey & Roberts, 2013). There needs to be consideration given to the learning styles and methods of delivery for these different groups, to ensure they have the skills necessary to incorporate changes in knowledge into their practice (Ousey & Roberts, 2013).

Millennial nurses have different needs from other generational groups, in regard to learning, and it is this group that will be growing within nursing. It is therefore necessary for the organisation to be ready to cater for these needs and also the universities to assist them to become lifelong learners. Millennials generally do not like the traditional lecture-based or teacher-centred learning, instead preferring to be active in their learning by participating in group work or in simulations (Pardue & Morgan, 2008). This requires activities that include sound, graphics, and kinaesthetic activities as well as written text. Millennials, however, need to learn how to contemplate information quietly and to engage in critical reflection from the older generations. By learning these skills, Millennials will have a deeper learning experience and therefore be better equipped for lifelong learning (Pardue & Morgan, 2008). It was not evident in the Theory of Economising Learning, that different age groups

required different styles of learning. However it was not specifically looked for in the interviews. It is therefore important that other research such as this be undertaken to ensure any differences in learning styles are catered for.

5.2.2.3.2 Multitasking

Multitasking is common with Millennial-age students who will undertake learning while also engaging in many other types of activities (Brown et al., 2010; Junco & Cotten, 2012). This has been shown to contribute to poorer learning outcomes for students as their attention is divided between the activities. However, the learning outcomes are also dependent on the types of activities they are multitasking with. If the task other than learning is not mentally demanding, then the learning outcomes are similar to those where they are focusing on the learning alone (Ahmed, 2012; Brown et al., 2010; Junco & Cotten, 2012). Investigations differentiated between the types of learning tasks while walking, and found that people were able to better learn while undertaking audio learning than visual learning while mobilising, as the environment required greater visual concentration when moving (Ahmed, 2012).

When nurses undertook multitasking in the Theory of Economising Learning, they were involved with activities that did not require a significant mental load. Most were undertaking activities such as waiting for children, exercising, and travelling which allowed them to concentrate on their learning.

5.2.2.3.3 Catching time

In addressing the issue of time, it was found in the Theory of Economising Learning that nurses would catch time or multitask. These behaviours allow the nurse to take advantage of short periods of time which many nurses indicate is necessary to enable them to engage in learning (Gupta et al., 2012; Heartfield et al., 2013). To assist nurses in these behaviours, it would be beneficial to make learning modules to fit into these short time periods. This was trialled by Gupta and colleagues (2012). They divided nursing learning packages into short modules that each covered a topic within the main knowledge area. This was an eLearning initiative that was made available to the nurses via CD Rom or flash drive, therefore connectivity was not an issue. They aimed to make the learning available to enable nurses to learn when it was convenient to them and take advantage of opportunities for time in learning. Each module took

approximately 15 minutes to complete which would fit into the nurse's busy schedule. These learning modules were well received by staff (Gupta et al., 2012). Other research also found that education conducted within a short timeframe was beneficial. The nurses in Heartfield and colleagues' research indicated that the education needed to be completed within twenty to thirty minutes (Heartfield et al., 2013). Given the behaviours identified by the participants in the Theory of Economising Learning it would be worthwhile investigating this type of learning further. Developing learning in short modules could take advantage of not only short periods of time in the nurse's personal life, but also short periods of time available within the workplace.

5.2.3 Engaging

After a review of the literature, Billett (2004) determined that calling learning informal and formal gives rise to beliefs that formal learning is somehow better that informal learning. He asserts that this is not the case and that workplace learning can actually be very structured and have pedagogical properties. Learning is key in the workplace to practices and is controlled by the workplace. The workplace involves negotiations between how knowledge is used, the roles of workers in the organisation, and the processes that are undertaken (Billett, 2004).

Given this view, credentialised learning became the term used in this research, as the use of formal learning is viewed by different people in different ways, as will be seen in Eraut's (2000) definition of non-formal learning later in the chapter. Nurses within this study did not value their learning in the workplace or their self-directed learning any less than they valued the formal learning they had previously undertaken within an educational institution. Nurses actually valued their workplace learning as it was directly applicable to the work they were doing and at times found that "formal" learning was often not relevant to their work.

5.2.3.1 *Learning on the run*
Eraut (2007) found that learning from other people within the workgroup was a common way that people learned within the workplace. People also sought

information from others outside of the immediate workplace in preference to undertaking written or audio-visual learning (Eraut, 2007). It was also found in the Theory of Economising Learning, that learning from others in the workplace was a common way to learn. Learning from others usually occurred when a nurse fell short with their knowledge and required knowledge immediately. Many nurses stated that when they fell short with their knowledge, they would also seek out policies and procedures, or would search on their mobile device or the workplace computer.

Collegiality of the organisation affects the interactions with other nurses, and whether a nurse will feel comfortable in seeking information from others. Pearson and Lucas (2011) found that health professionals valued being able to learn from peers. This engagement was enhanced when the learner respected the other staff member and when there was a supportive learning environment. Learning in the clinical environment was found to be valuable, as it was learning in place with real clinical encounters (Pearson & Lucas, 2011). The Theory of Economising Learning had similar results, with nurses both indicating that they did not always feel comfortable asking other staff for information and also that they learned from senior staff frequently in the clinical environment. They could therefore apply the learning directly to patient care. It was also found in this research that it was important for nurses to respect the person they were asking information from in order for them to learn.

5.2.3.2 *Pre-emptive learning*
In discussing pre-emptive learning in the Theory of Economising Learning, it has been defined as intentional learning that does not result in a credential. This learning would be considered informal learning, however, it does not meet all the criteria for informal learning by other authors. Eraut (2004) defines informal learning as being closer to the informal rather than the formal end of the continuum including characteristics such as "implicit, unintended, opportunistic and unstructured learning and in the absence of a teacher" (p. 250). This definition fits with the nursing profession with the exception of being in the absence of a teacher, as nursing education is often opportunistic with a nurse educator present.

Eraut (2000) describes non-formal learning as a typology including Implicit Learning, Reactive Learning and Deliberative Learning. He proposes that most workplace learning is informal and comes as a by-product of workplace activities (Eraut, 2000). These definitions closely align with the categories of learning that arose within the Theory of Economising Learning and are therefore important to discuss with the exception of implicit learning.

Although implicit learning is undeniably part of workplace learning, intentional learning has been the focus of this study. It is the process that is involved in intentional learning, which can be influenced through such methods as mobile learning, which this study first sought to investigate. Eraut (2000) argues that implicit learning is in fact part of most learning through experience. Implicit learning would therefore be occurring continuously in the workplace and would be taking place as nurses reflect on occurrences during a shift, on the outcomes, and how others reacted to the situation. It would therefore be prudent to believe that a culture that embraces best practice would therefore also assist in improving an individual's implicit learning.

Reactive learning is learning that is unplanned and is near spontaneous (Eraut, 2000). It occurs due to situations arising in the workplace at the time, shortly after an incident, or situations that are about to occur. It is characterised by no time being officially set aside for it to occur. The level of intention varies according to the situation and the need to set time aside to reflect on the learning, may or may not happen to make it deliberative learning. Deliberative learning is learning that is planned but not formal (Eraut, 2000).

Reactive learning is discussed in the Theory of Economising Learning as learning on the run. It is termed learning on the run, as it occurs when nurses find themselves with a knowledge deficit, which requires them to gain the knowledge needed to address the immediate needs of the patient. It is therefore reactive to a situation. This reactive learning often occurs, when the nurse is being mentored by someone more experienced, or the nurse facilitator who is able to provide spontaneous education that is both meaningful and best practice. Given how the nurses discussed this learning, it was apparent that at

least some of the learning was reflected upon and thereby became a part of their own experience and practice.

5.2.4 Organisational context

5.2.4.1 Work culture

Supportive managers play a large role in helping novice nurses to belong and develop in a ward, by providing adequate social and emotional support. Good support and education were not always enough, however, as conversely, some nurses who were not provided with emotional and social support did manage to transcend their situation and acquire the knowledge they needed to survive. Support allowed the nurses to develop their capabilities more quickly, however, some experienced nurses did not see this as an investment. The investment, however, is essential in order for novice nurses to maintain good morale and be retained (Eraut, 2007).

Novice nurses within the Theory of Economising Learning did not identify lack of support as being an issue, however, did discuss the support of face-to face education as being important. They also indicated that having senior staff available to assist with problem-solving situations was valuable. Added to this was the rapid rate at which they needed to learn to be able to practise in a busy ward environment.

The manager of an organisation or unit has a significant role in the learning culture of a workplace. It is for this reason that it is important that managers be selected for positions with a strong emphasis on their views and personal beliefs. Managers have an integral role in influencing the climate of the organisation and the disposition of the individual, by paying attention to relationships, mutual learning and encouraging feedback. They also have a direct influence on the learning opportunities that are available to staff and encouraging participation in these activities. Managers direct work, so employees are given appropriate challenges and support (Eraut, 2004, 2007). Further, Eraut (2004) suggests that organisations need to employ and develop managers for the role of facilitating learning. This, he suggests, is not normally the case, as managers receive further development around motivation and productivity while little attention is given to developing learning. This is

supported by Queensland research with nurses who indicate that there are very strong relationships between having a supportive manager and positive beliefs around CPD (Katsikitis et al., 2013).

Managers are pressured to provide outcomes to satisfy bureaucratic requirements of improving efficiencies, as well as ensuring high quality patient care. The pressure to increase the focus on these areas often leads to the neglect of staff needs (Henderson, Schoonbeek, & Auditore, 2013). Henderson and colleagues (2013) propose that managers should focus more on the quality of patient care rather than targets. When targets are the focus, staff are more likely to only provide essential work, rather than engaging in the workplace, as they do not feel a sense of purpose or worth. They propose that if this is the situation in a workplace, then the environment needs to be improved by building constructive relationships. They therefore introduced strategies to challenge existing behaviours, and encouraged staff to contribute to and finally sustain new behaviours. To achieve this outcome, they provided intensive education, modelling, and support to staff to change their behaviours. These strategies were conducted within the ward and encouraged staff to become more supportive of each other. More staff were employed to relieve the ward staff to attend education close to the ward area. The manager of the unit also needed to support staff and interacted with them regularly, encouraging positive behaviours. These strategies were shown to improve the nurses' values and attitudes to their work and in delivering excellence in care (Henderson et al., 2013).

The manager in an organisation, as discussed by nurses in the Theory of Economising Learning, sets the importance of learning within the unit. Nurses stated that if they were supported by being funded to learn, or were given time in their workday to learn, they were more likely to undertake learning in their own time. This study also found that nurses who were positively motivated, and engaging in multiple learning opportunities themselves, increased the amount of learning all nurses in the workplace had access to. They did this through increasing the educational current within the work area, by providing materials for other staff, and therefore reducing the time these nurses needed to

invest in learning. These nurses also increased the level of knowledge that is expected within the workplace, by setting an example of being able to apply best practice to their work. By setting this example, they are also demonstrating that the learning is applicable to the work situation. Managers and senior staff also have a role in determining the definition of competence.

Maintaining competence was the main concern of nurses in the Theory of Economising Learning. Mulvey (2013) defines competence as a "catch-all term for the combination of skills, knowledge and attitudes which enable people to do their job well" (p. 271). This, however, raises the question of how this competence is measured. By what standards is a person competent in their work?

Eraut (2004) discusses competence as being either an internal expectation of the individual or as being a social-centred meaning, that it is the expectation of others. The definition of competence will depend on the micro-politics of the situation, and will be the expectations of both the co-workers with and the clients. The expectation of competence is contingent on the level of experience the person has, and the position the manager has placed the person in. Therefore, competence for each individual will change over time depending on the situation they are in, changing practices and their continually growing level of experience. Therefore, it is important that an individual be allowed to gain experience while not being extended too far and while being supported by staff with greater experience (Eraut, 2004).

Eraut's research is supported by Billett (2008) who suggests that workers need to learn to meet the cultural goals and expectations of the workplace. Therefore, the ongoing learning needs of the individual are dependent on what the current needs and expectations and social practices of the workplace are.

For a person to grow in experience and knowledge, Eraut (2004) proposes that a person must be able to participate in group activities to improve the workplace, such as doing audits or reviewing policies. He suggests that by working alongside others, the person is able to observe and listen to how the others are undertaking activities, and therefore learn from them. Being able to

undertake challenges while being supported, also enables people to grow in confidence. Working with different clients enables people to grow in experience as they need to learn about the client and the differences of each individual (Eraut, 2004). In a review of literature, Williams, Parker, Milson-Hawke, Cairney, and Peek (2009) also reported a need for all staff to feel valued and empowered to learn and introduce change. They concluded from the literature that the manager of the unit needs to develop a learning culture in the workplace, so that developing practice is seen as everybody's job. Practices should be developed with all staff contributing and therefore, the questioning of practice will become routine and practices will change (Williams et al., 2009).

The culture of the work group will have a direct impact on individuals in regard to their learning. The workplace culture will differ depending on the distinctive makeup of each individual's prior experiences (Eraut, 2004). In some cultures, individuals will be able to flourish and in others they will stagnate. This will be indicated from how much the group supports each other in learning and how they respond to the challenges of their work. The workplace culture not only affects the learning of the group, it will correspondingly affect the retention of staff and the quality improvement activities. This further supports the need for managers to work on the culture of the group, and also raises the importance of working in partnership with members of the group (Eraut, 2004).

Although the overall learning culture of the organisation will impact on the individual's ability to learn, it is also dependent on the individual's intrinsic motivation and experience. Learning will be dependent on the focus of the interaction, the cognitive absorption the person experiences, and the actual participation of the person. The interest people have in the topic will also influence their learning (Goel, Johnson, Junglas, & Ives, 2010).

As can be seen from the literature, the culture of the organisation, specifically in relation to learning, is critical to the learning engagement of the nurse. The culture of the organisation is therefore imperative for maintaining staff. A

positive culture is also important for safety, with staff who are knowledgeable in their area, and able to provide the best available care for patients.

5.2.4.2 Supporting learning

The organisation has a role in providing managers and other staff in developing skills that will allow them to support the development of others. This would not only provide an opportunity for the less experienced staff to gain clinical skills, but also encourages leadership competence in the more senior staff through them supporting others. As a nurse will develop their leadership skills throughout their career it is, therefore, important to provide learning around leadership throughout their career (Henderson, Briggs, Schoonbeek, & Paterson, 2011). This view is supported by Katsikitis et al. (2013) who reported that nurses within the Sunshine Coast region of Queensland were requesting education regarding how to mentor and delegate to other staff.

The above literature both supports and adds to the Theory of Economising Learning. It was found in the Theory of Economising Learning that nurses are strongly influenced in every aspect of the process by the culture and support of the organisation. The organisation has the potential to increase awareness of learning through high expectations within the workplace. Additionally, the workplace influences the educational current, and therefore the amount of learning opportunities nurses are exposed to and the ease with which they can access them.

5.3 Conclusion

As highlighted within this chapter, the Theory of Economising Learning is validated by, and adds to previous literature. The findings of this theory are found in many other areas both within and outside of the nursing profession. This gives weight to the findings within the study, especially in areas such as the importance of the organisations culture and the use of personal resources in continuing learning. Benner's theory of novice to expert, which relates to nursing education, also validates the findings of this theory. This theory is now able to be used in conjunction with Benner's (2001) theory to provide appropriate learning opportunities for nurses' professional stage.

It is evident from this research that no theory is able to be viewed in isolation as encapsulating all issues related to learning. Each motivation theory reviewed is not entirely applicable to this group of participants, however, components of each are important. Therefore, each of the motivational theories adds to the Theory of Economising Learning to provide insight into applying the theory, in improving engagement with learning, and the use of digital technologies.

The following chapter introduces a model for a healthy learning workplace. This model has been developed from the Theory of Economising Learning and the literature reviewed in response to the theory.

# 6 Chapter 6 – The Healthy Learning Workplace Model

6.1 Introduction

The previous chapter situated the Theory of Economising Learning within current literature and theories, and demonstrates that support for this theory exists in the literature. The Theory of Economising Learning, together with other relevant theories, has led to the development of a model consisting of four domains: 1) expectations, 2) current (educational), 3) economical access and 4) support (ECES). This model has therefore been named the ECES Model of a Healthy Learning Workplace (see Figure 6.1). This model will provide guidance to organisations to improve access to and engagement with professional development in the workplace.

The theories of motivation have added a further dimension to the Theory of Economising Learning by providing a more in-depth understanding of the motivational issues impacting individuals. These theories will further inform organisations in improving nurses' motivation for learning. In order for an organisation to engage employees with learning, they will need to increase the expectation to engage with learning within the organisation, increase the educational current, and increase economical access and support to learning. Alternatively, strategies to supplement the limited personal resources of nurses should be promoted to reduce the personal resource burden for learning. These strategies will include the use of eLearning, designed for use across multiple devices. Although other studies have descriptively addressed the barriers to nurses undertaking professional learning, this study investigates the behaviours that nurses use to address these issues. From this research, four key domains have been identified and are able to be targeted to improve the nurses' engagement with learning. This chapter will discuss these four domains, namely: 1) expectations, 2) current, 3) economical access and 4) support.

6.2 ECES Model of a Healthy Learning Workplace

Figure 6.1 ECES Model of workplace learning
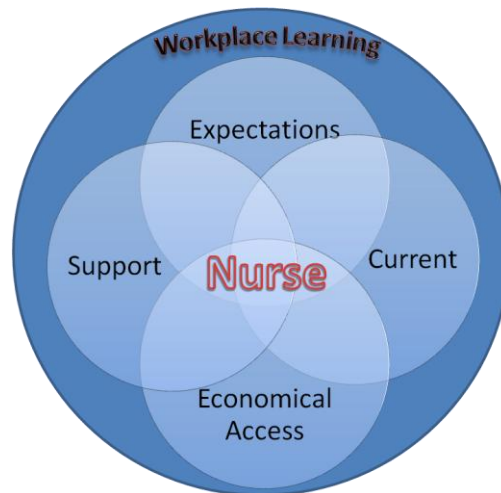
Each of the four domains are interrelated and dependent on each of the other domains (see Figure 6.1). For an organisation to have a strong learning environment, each domain must be developed. These will be considered briefly below before a more detailed exposition of each.

6.2.1 Expectations

The combined expectations within the work unit directly influence a person's definition of competence. This means that higher expectations will lead to nurses striving for a higher level of competence. Expectations come from the organisation, however, are mostly dependent on the nurses' immediate workgroup.

6.2.2 Current

The availability of learning opportunities can be likened to the current of a stream that flows past a given point. If the current is too slow, the water will stagnate, whereas at the right speed the stream maintains its vitality. Learning opportunities need to be relevant and credible. These opportunities need to be offered to the nurse at a rate that will maintain a high level of competence, but not at a rate that will overburden the nurse.

6.2.3 Economical access

Nurses need to have access to education that meets their perceived personal competence needs, by the most efficient means. This will require the organisation to provide or assist the nurse in accessing quality education through a variety of modes. Offering education using multiple modes allows the nurse to determine the most economic option for them at that time. This will reduce investment of the nurse's own personal resources while attaining quality learning.

6.2.4 Support

Support is provided by the work culture and the organisation. Support needs to be provided to nurses to resource and promote learning. Providing funding and time for nurses to undertake learning supports them by reducing the resources they need to personally contribute. Additionally, the organisation needs to support educators and managers in developing and promoting learning.

6.3 Further explanation and justification
6.3.1 Raising expectations in the workplace

Figure 6.2 Model of Workplace learning: Expectations
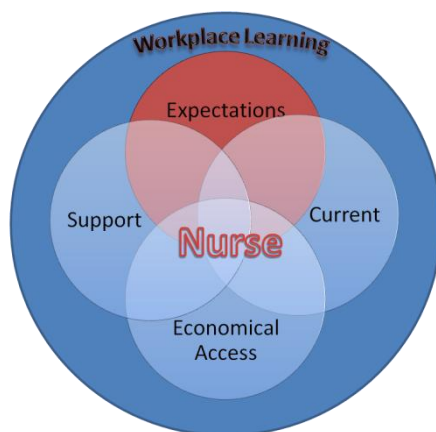
Raising expectations is the first of 4 interrelated domains of the healthy learning workplace model (see Figure 6.2). It was found in this research that the main concern of nurses was to maintain competence with limited resources. Competence is a term that has different meaning for different people in varying circumstances and is not static. Instead it will vary over time in relation to the person's internal expectations

146

of themselves and the expectations within their social group (Eraut, 2004). Therefore the people's expectations and their definition of competence are able to be impacted by the organisation.

This research found that both personal expectations and expectations of others influence the importance a person places on learning and therefore their motivation for learning. It is necessary to have high expectations in a workplace for nurses to place a high importance on learning. Expectations in the workplace are mostly influenced by senior staff in the work area and through nurses who display driven behaviours. These findings were supported by Eraut (2007) who proposed that learning is related to the goals of the workplace, and Eason (2010) who found that a work culture needs to display curiosity and a focus on the dynamism of the field.

The three motivation theories discussed in the previous chapter support the ECES Model. These theories provide insight into how people are influenced to promote positive behaviours, and support the nurses in their belief of their ability and likelihood of succeeding in learning. As these motivational theories have been used previously in nursing with positive outcomes, it is appropriate to use them to support the Theory of Economising Learning in providing suggested approaches to organisations to improve workplace knowledge.

6.3.1.1 *Personal expectations*

Personal expectations are the nurses' internal motivation to improve their knowledge, or to have a certain level of expectations regarding their knowledge and the care they are able to provide to the patient. As this is an internal process, it is necessary to look at the motivation theories for guidance with how to improve this aspect with each individual nurse.

People will bring beliefs regarding their personal expectations which have been built over time. They will have goals and standards that they have set for themselves as a result of these beliefs, and therefore when these beliefs are compromised, they will be motivated to remedy the situation (Bandura, 1977). This relates to nurses' personal beliefs regarding their expectations of themselves, and how they expect to perform in the work situation. These beliefs will not only come from their nursing career, but will have been

developed throughout their life. Therefore, all staff will enter the workplace with different beliefs that will then be influenced by the workplace. Expectations of others will ultimately influence the person's perceived self-efficacy.

People will also have beliefs regarding their performance in learning. These beliefs will have developed from successes or failures with their previous learning experiences, and if they have been rewarded or not for completing learning. This is discussed in both self-efficacy theory as performance accomplishments (Bandura, 1977; Lorsbach & Jinks, 1999), and in the theory of planned behaviour as behavioural beliefs and control beliefs (Ajzen, 1991, 2002). These beliefs can be positively impacted in the organisation through providing learning that is achievable, and through the nurse being supported by the organisation and senior staff. Alternatively, these beliefs can be negatively impacted by negative experiences in the workplace.

Through vicarious experience, nurses will be able to change their beliefs regarding their capabilities of completing learning and in their functioning within the workplace. When nurses witness other nurses undertaking learning, improving their knowledge, and being rewarded for this, they will have an improved belief that they will also be able to undertake learning and receive positive rewards (Bandura, 1977; Washington & Moxley, 2013).

In self-determination theory, it is discussed that for people to be autonomously intrinsically motivated they must take on the philosophies of the workplace such that they want to be a good employees (Deci & Ryan, 2008; Gagne & Deci, 2005). People will want to have relationship and connectedness with the group and therefore will undertake behaviours that will gain them acceptance (Gagne & Deci, 2005). The motivation is therefore extrinsic in that it comes from the workplace but it becomes intrinsic motivation as the person believes it is of value to them to gain greater knowledge. Nurses need to believe that knowledge is an essential element to being a good nurse and that this is a behaviour that will assist them in being part of the work group. Hence, the value must be raised within the organisation.

For nurses to be aware that they are falling short, they will need to come to a point when they are working, where their knowledge is not at the optimum level to meet patient needs. The expectation within the ward therefore needs to be increased so that a high level of knowledge is expected and that it will be expected that best practice is always used in patient care. Therefore, for the nurses to be considered to be doing a 'good job', they need to be providing optimum care to the patient. Doing a 'good job' will need to be valued by individuals for them to undertake these positive behaviours.

Taking on the beliefs of the organisation is dependent on the workplace culture in general. Nurses must align their values with the organisation's values. Nurses must also see that the organisation is living those values as a whole and be an organisation they believe in. There will need to be positive rewards for staff in aligning themselves with workplace goals, so staff identify this alignment as valuable to them personally.

The expectations of others have a significant effect on the awareness nurses will have regarding their learning. This is where the culture of the ward will impact. The knowledge level of the more senior staff within the ward and the expectations of the care the nurses provide to patients, will either make nurses feel they do not need further knowledge or will prompt them to search for more learning.

6.3.1.2 **Expectations of others**

Nurses who display driven behaviours towards learning, and who put strategies in place to overcome obstacles to learning, will have a positive effect on the learning engagement of the work group, by raising expectations in others.

As discussed in the Chapter Four, when others expect a high level of knowledge from an individual, they will then be aware of a need to learn, if that expectation is not met. There is evidence to show that expectation is raised by the more senior staff within the work unit. It is therefore important that the senior staff within the work unit, starting with the director of nursing and the nurse unit manager, will set an example of applying and encouraging best practice in caring for patients (Henderson et al., 2013).

Expectations cannot be demanded by the organisation; instead they must permeate the culture of the group. This extends to the clinical nurses within the ward, who need to be seen to be applying best practice, to encourage the junior staff to mimic that behaviour. When patient care is discussed at a high standard in handovers and when senior nurses are rounding with (discussing and visiting patients with staff at regular intervals) junior staff, then the awareness grows. Less experienced staff will become aware that they need this knowledge to be able to practise within that unit and be a good employee.

It is essential that a workplace be examined to determine the level of engagement with learning and best practice that is demonstrated by senior members of staff, as it will be these staff who drive the learning culture within the group. If the commitment of this group is found to be lacking, this group therefore will need to have further professional development to promote these behaviours (Katsikitis et al., 2013), and these traits be actively sought out when employing new staff. Additionally, it is important that beginning nurses in the area are nurtured and encouraged to display these traits, as they further develop to become senior staff.

When there is a body of senior staff in the ward who actively seek and engage with best practice, then they can increase the educational current to other staff, which will allow these staff to sift and sort that information according to their personal curriculum. The practice of sending information to other staff does not only provide easy access to the information but also assists in awareness through the less experienced staff being able to identify what the more senior nurses see as important learning for their curriculum. In accessing this information from someone more senior whom they trust, they are able to gain awareness of the need for this type of learning, and add it to their personal curriculum, therefore increasing their expectations. Therefore to raise expectations, there must also be an education current that will make learning opportunities available.

6.3.2   Increasing Current

Figure 6.3 Model of Workplace learning: Current
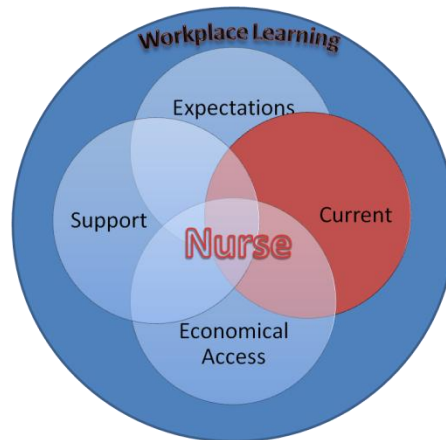
Current refers to the rate at which learning opportunities are brought to awareness, and made available to nurses within the workplace. Current will impact and be impacted upon, by the other three domains, to influence the health of learning in the workplace (see Figure 6-3). It is recommended that the current of learning opportunities be at a rate within an organisation that will raise awareness of opportunities and provide ease of access to those learning opportunities for nurses. Care must be taken that the current not be so great that it overwhelms nurses.

It has been shown in the Theory of Economising Learning, that nurses who have more learning opportunities will consequently engage more with learning. The learning opportunities must be appropriate to the nurses' needs or the increased current will not increase the nurses' uptake. The current needs to be increased through a combination of learning originating from nurses within the work unit and from the organisation. Most importantly, nurses must be aware of the learning opportunities available.

When nurses with driven behaviours send information to other nurses, they increase the education flow. This decreases the effort the other nurses need to expend in order to access the information and saves them time. This information is "pre-approved" to be adopted in the nurse's personal curriculum as it is being introduced by a member of the same team. Additionally, if learning opportunities are promoted through a nurse working in the same area,

the learning material has a high probability of being relevant to that area at that time.

Allocating learning portfolios to nurses who display positive learning behaviours in the workplace, could give them permission to share their interest with other nurses and increase the flow of learning in the workplace. Ultimately the aim would be to increase the nurses autonomy and reward nurses with portfolios for positive behaviours. Therefore, according to self-determination theory, this would improve the alignment with the nurse's goals and identity (Deci & Ryan, 2008; Gagne & Deci, 2005). As the nurses' knowledge in these areas increases, there will be an expectation of knowledge within the work area, again increasing the nurses' expectations of themselves through applying greater value to the learning. Areas for learning portfolios could include infection control, manual handling, or risk. They could also be particular aspects of a specialty area that they could hold particular responsibility for. An example would be asthma in a medical ward.

It is important that the flow comes from other nurses whom nurses see as trustworthy and credible within their work area. If the information comes from a person they trust, the nurses then identify that the information they are receiving is applicable to their environment. Nurses will then be more likely, when sifting information, to keep it. If nurses sending others information, however, are found to consistently not send relevant information, it is then likely that the future information they send will not be engaged with. This needs to be monitored closely to ensure nurses are not being overburdened with irrelevant information.

There are often areas that management are able to see as knowledge deficits within clinical areas, however these deficits are not apparent to staff (Eraut, 2004). To engage staff in education, it is necessary to allow the staff to identify it is important for them, so that they will acquire the learning. This may involve giving staff more autonomy in their work area, and allowing them to identify from the same data as management why particular learning is needed. This could include involving staff in collecting data in the clinical area,

analysing the data and then involving them in problem solving if required (Eraut, 2004).

Mandatory training is often seen as a burden to nurses. It is important to keep the amount of mandatory training to a minimum, both to ensure it is completed and to not burden the nurse with so much mandatory training that it is completed at the cost of their own identified needs. Mandatory training impacts on the resources that nurses are able to spend on learning. It is acknowledged that mandatory training for certain learning is legislated and therefore has to be completed, however, if nurses are required to complete other education that is made mandatory by the organisation, then it becomes a burden. In a positive learning environment, nurses will be given the opportunity to identify their own learning needs. After determining their personal curriculum and given the right opportunities in the right format, they will undertake the learning to ensure their own competence.

Staff reported that they especially liked to be sent information via email, as the information was coming directly to them and they could go on to sift and sort that information to determine how it was suitable to them. Facilitators stated within this research that email was a good way they could contact staff with valuable information. It is therefore suggested that email be used to bring staff's attention to new information. Emailing of learning opportunities or best practice articles, allows nurses to access learning easily. When emailing information, it is important to ensure that it is able to be opened on all digital devices, including but not limited to, computers, tablets and phones, and across all operating systems (iOS, Android and Windows). This allows nurses to access the learning at a time and location suitable to them. The main attraction of being emailed learning opportunities was that nurses did not have to search for the learning as it came directly to them, thus increasing their access to learning opportunities.

As already discussed, it is important to note that the educational current be made up of opportunities that are relevant to nurses. The current is also able to be too great. If the current is too great nurses will not have time to sift and sort information and will disengage. Therefore, educational current that flows

directly to nurses must be relevant to them at the time. To make numerous opportunities available to nurses and for them to be aware of learning that is available, it would be prudent for the organisation to have access points for learning that are easy for nurses to navigate. The nurses could be directed to these resources via emails for learning of particular interest to their work area at that time. These access points will now be discussed further in relation to economical access (Figure 6-4).

6.3.3 Providing economical access to learning

Figure 6-4 Model of Workplace learning: Economical Access
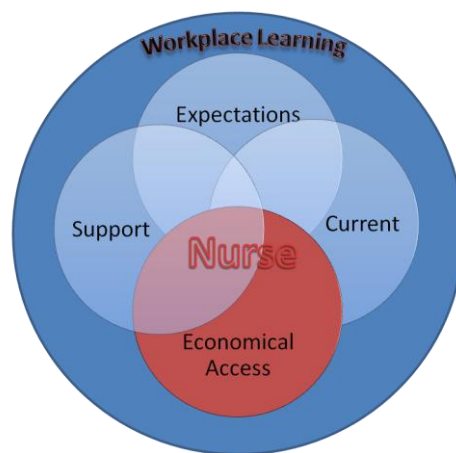
It is recommended that nurses be given opportunities to access high quality learning that will not require them to invest large amounts of personal resources. Economical access, therefore has a significant impact on the other domains within the Healthy learning workplace model (see Figure 6.4)

It is important in a health care organisation to encourage and facilitate professional learning. Professional learning will aid in ensuring that staff have the knowledge and skills to achieve a high standard of nursing care, and ultimately improved patient outcomes. As discussed in the literature and from the findings of this research, there are numerous barriers to nurses undertaking professional learning, including access to learning materials, time restraints, expense of education, and internet connection (Coventry et al., 2015; Griscti & Jacono, 2006; Haywood et al., 2013; Heartfield et al., 2013; Katsikitis et al., 2013). However, as found in this research, there are also areas where the

organisations and educators can have significant influence in reducing the amount of personal resources required by nurses to undertake the learning.

As discussed in the previous section, emails can be sent to staff to direct them to relevant bodies of information. This would have the combined effect of not overburdening the staff with opportunities and providing an easy access point to save the nurse time. Accessibility could be improved for staff, by putting all information together that is appropriate in a blog, DropBox folder, SharePoint site or one of the other numerous places that information can be shared virtually. The information would also be readily available to staff when they fall short within the workday and need to access the information immediately without having to search for it.

6.3.3.1 Catering for experience

The experience levels of nurses will impact on the type of learning they want to engage in. Obviously, experienced nurses will not need the depth of learning the novice nurses need. Experienced nurses will generally have a greater understanding of their specific knowledge deficits and the material they will need in order to acquire that knowledge. Novice or beginning nurses, however, will have a greater knowledge deficit and will need more feedback to gain understanding.

Face-to-face education is not something that most experienced staff want to engage with. These staff do not want to sit through a long education session when they require much less information. Experienced staff prefer to be able to target the learning they require and therefore achieve the same learning outcome using less personal time. E-learning or paper-based learning is more appropriate for these staff. Additionally, when developing learning for a group with multiple experience levels, it would be best to provide modules at different levels within a topic. This would allow nurses to be able to pick and choose what aspects of the learning they need to know, to give them the knowledge economically.

The exception to face-to-face learning for experienced staff is when the learning is in a social situation. The social aspect of face-to-face learning is an attraction to some experienced nurses who have the time to commit to the

learning and who enjoy being social with their peers. This allows nurses to spend time with work colleagues in an environment with which they are connected. This may also have the benefit of building community. One organisation in this research provided evening education for nurses in a social environment. The nurses spoke positively about these events and enjoyed the social aspect of the learning.

6.3.3.2 *Developing learning for the less experienced nurse*
Less experienced staff prefer to have at least some education face-to-face to allow them to have their understanding tested. This can be achieved in a variety of ways. When face-to-face learning is offered it should be recorded. Staff who are not able to be present are therefore able to view the learning and possibly gain extra understanding from the questions that are asked during the recorded session. They should then be given opportunities to discuss the learning with the educator or senior staff to be able to gain understanding and consolidate their learning.

When undertaking learning using paper-based or digital materials, having experienced nurses as mentors would allow less experienced nurses to gain the same advantage as learning face-to-face. This could potentially increase the variety of learning opportunities for less experienced nurses. It would also make the learning more flexible, and therefore allow learning to occur for these nurses at a pace and time that is suitable for them.

Some hospitals provide learning sessions specifically for staff undertaking a graduate program. The nurses who had experienced this indicated that these sessions supported them in the knowledge needed for a newly graduated nurse. The social factor could also be an issue here, as they would be able to discuss their experiences and learnings with other people in the same situation as themselves. These sessions also add value to new nurses' perceptions of continuing learning, and of the value the organisation places on continuing learning.

As less experienced nurses will fall short with knowledge more frequently, they need to have quick access to information to give them the essential knowledge they need to be able to undertake their work. It is also necessary

that together with the learning on the run, they are able to be mentored by senior staff on whatever shift they are working. Less experienced staff will often access the senior staff as their first action if their time is limited. It is therefore essential that these senior nurses are approachable and have the knowledge needed to support these nurses.

It would therefore be appropriate for all nurses who are placed in charge of shifts to be given skills in supporting the learning of less experienced staff. This makes learning a continuing process and something that is being lived by the organisation. Nurses who are senior within the ward will need education regarding learning strategies and how best to support other nurses. It is crucial that the senior nurses have the time available to them to provide the support and to monitor the progress of the beginning nurses, to ensure that the later are receiving the learning and support they require, both with knowledge and emotionally. They also need to monitor the beginning nurses' progress to ensure that they have the knowledge needed, thereby improving patient safety.

Policies and procedures are often accessed by staff beginning in a workplace, making it important for these to be available to staff at all times. Therefore, computers should be available to ensure the staff are able to gain access to information when they need to. Alternatively, or in addition, the policies and procedures should be available for staff to access, through their own mobile device or from a mobile device supplied by the organisation. This would enable nurses to access both policies and procedures quickly when needed in patient care, and outside of work hours.

Information databases and apps need to be promoted to less experienced nurses, so that the information they are quickly searching for when falling short is best practice. The apps may differ for less experienced nurses in that they may be more simplified than those needed by experienced nurses. Given the large variety of medical apps available, the opportunities to find apps appropriate to the level of the nurses' knowledge are great. Information databases and apps will be discussed in more detail later in the chapter.

6.3.3.3   *Variety in teaching methods*

It was found in this research that in order to increase access for nurses, multiple methods need to be provided for the one learning area. Even though most people find that e-Learning saves them personal resources, there are some types of learning that people prefer to have as paper-based for various reasons, including that they like the feel of paper or that they like to be able to take notes on the paper. This needs to be taken into account when developing learning, and printable options should be provided where possible. Face-to-face learning is also appropriate, especially when the nurse's knowledge in the area of learning is limited or when it provides a means of socialising with work colleagues.

People who are not comfortable with technology need to be able to access learning that is appropriate for their needs. Some of these people may be assisted by being provided with support and further education regarding the use of technology. Others, however, may not want to start to use technology or may want to limit their exposure to work outside of work hours. These staff will therefore resist being connected via digital devices.

As identified earlier face-to-face learning is most appropriate for beginning nurses, who need to ask questions to gain a deeper understanding of the material. This, however, is often considered a waste of time for experienced nurses. Therefore, it is proposed that when developing materials, educators take into account the experience of nurses, as outlined by Benner (2001).

6.3.3.4 *Internet access*

It is not predictable if nurses will have internet access available to them outside of the work environment. Care needs to be taken when developing materials to ensure that those nurses with limited or no internet access are not disadvantaged. It would be preferable for education to be downloadable to a device to enable nurses to transfer the learning to an area where they can undertake the learning. Connection to the internet should be accessible to nurses within the workplace to allow downloads of educational materials relevant to their work area. Alternatively, materials could be available to staff via a flash drive.

6.3.3.5 *Designing modular education*

In the course of this research, it was discovered that nurses opportunistically undertake learning in small periods of time. Professional learning for nurses needs to be developed in discrete modules, in a size that can be completed in a small amount of time, or that can be started and stopped at numerous points throughout the learning. This would allow nurses who are multitasking, or catching time, to make achievable gains with their learning in relatively small parcels of time.

A discrete module gives nurses the opportunity to achieve a defined amount of learning. This will give them positive affirmation that they are able to achieve learning goals and therefore raise their self-efficacy so that they will be able to complete more learning (Bandura, 1977). Small discrete modules will allow nurses to sift the information that they need. If the modules are structured in levels of lesser to greater degrees of knowledge, nurses are also able to enter the learning at a place that is suitable to their personal needs. This would reduce the amount of time nurses with greater knowledge need to spend sifting information and undertaking learning that they already have achieved.

Discrete modules enable nurses to fit learning into their busy schedules, with other research having evaluated courses containing modules of between 15 and 30 minutes long (Gupta et al., 2012; Heartfield et al., 2013). The results were positive in both of these studies; however, further research needs to be conducted to determine if small modules of learning will meet the needs of nurses. Additionally, the ideal length of a module will need to be determined.

From the data collected in this study, as well as from past research, it is apparent in postgraduate continuing learning, that all people will have unique needs in regard to the amount and depth of learning they will need to achieve the same outcomes (McLoughlin & Lee, 2009). Therefore, an educator needs to take into account novices, who will need a great deal of background information to enable them to understand the concepts that are being taught. The above research supports this research where it was found that experienced nursesdo not need as much learning to understand the concepts. In the case of changing practice due to new evidence, experienced nurses will only need the

new evidence to link it to previous knowledge and effect change. Novices will need to be given the whole explanation.

The modules should be developed so that nurses are able to enter at a module that meets the needs of their level of experience. There should be a section that gives an overview of the area without too much depth so that nurses with a good knowledge of the area can have the understanding without having to undertake the whole module. The modules should then be built from the lower levels of learning within the topic to scaffold the higher thinking that will be required. A pathway should be built through the learning with clear information as to what information is contained within each unit, so that each nurse is able to build the learning that they personally require to gain understanding.

The concept of modular learning should be followed for mandatory training. Mandatory training places a burden that needs to be minimised to enable nurses to use their personal resources to undertake learning that is within their personal curriculum. Therefore, the modular learning principles should be the same for mandatory training. Providing mandatory training in a variety of formats including those suitable for mobile devices would allow nurses to complete their training at a time and location suitable to them. Many hospitals do currently offer mandatory training to staff using technology, and staff commented on how much time this has saved them. They also commented that they now do not have trouble completing the mandatory training. This was mostly observed by staff who had sufficient computers available to them in the ward areas. These staff stated that they were able to complete their training within their work time and that they were encouraged to do so by their managers. This appeared to be a very effective way of completing mandatory training, as the staff were able to take advantage of time they had available, or that was made available to them within the workday, and therefore not impact on their personal resources. This could be improved by making the mandatory training modular so that smaller amounts of time would be needed for staff to be able to complete a module while working towards completion of the overall

package. Making the learning available via mobile devices and downloadable to devices would also improve accessibility for staff.

When developing modules, they also need to be available via other modaltities besides online. As discussed earlier in this chapter, e-learning modules may not suit all nurses. Other appropriate methods, dependent on the materials, should also be made available, and may include paper-based modules.

Modules could be built in a way that would also allow nurses to gain credentials from the modules. Financial cost and time are factors that deter nurses from undertaking credentialed education. Having a commitment that is smaller financially and in time could encourage nurses to undertake this learning and build into higher qualifications. This could impact the way nurses balance the value of the learning against the personal recourses involved. Potentially this would improve nurses' engagement in credentialed learning.

As discussed in previous chapters, nurses use multitasking as a tool to save time in undertaking education. This is education that nurses will undertake at a time when they are also involved in other activities and is well suited to modulised learning. They do this by either listening to podcasts or by working on their mobile device or also by doing readings and interacting with paper-based materials.

6.3.3.6   *Designing for time saving behaviours*
As found in this research podcasts are beneficial for multitasking and are often available through various specialty areas. Access to these sites to be able to download or be sent downloads of podcasts would allow nurses to be able to make use of travelling time, exercise time, or time when they are undertaking other activities within their life. Education downloaded onto tablets also allows nurses to undertake education when and where they have the available time, and a suitable environment for learning.

Vodcasts (video podcasts) are able to be used if individuals do not need to be interacting with the environment around them. Instances where vodcasts could be used via mobile devices are when commuting on public transport, when waiting for appointments, or waiting to pick a family from activities. These materials could be recordings of the face-to-face education that had been

provided to other staff, that the nurse can then watch when they have available time. YouTube is also a good medium for viewing educational materials for nurses. It is another area, however, that would need educators or senior staff to review, prior to staff watching, to ensure that the quality of the materials is of an acceptable standard, is best practice, and also is in an appropriate setting.

If learning is developed to be used on mobile devices, the nurse is able to plan ahead and download learning materials to undertake while multitasking. These could be articles that other nurses have recommended to them or could be articles sent to them from the specialty groups they have joined. The materials could also be learning modules that have been developed as part of learning packages, which nurses are then able to complete in a small amount of time.

Catching time could be promoted within the organisation to take advantage of small gaps of time, when nurses would have time to undertake short amounts of learning without affecting the running of the ward or patient care. In the busy ward environment this would not be available every day, however, all opportunities need to be looked for and all managers need to determine the opportunities that are available in their area.

6.3.3.7 *Linking to opportunities*

There are various online groups for specialist areas that nurses may belong to, that provide practice updates and some learning opportunities. These groups provide up-to-date information and also send links to new information on their site via email, to make their members aware. The groups generally do not have large membership fees involved and again provide an inexpensive easy way to access best practice information. If these sites are vetted for appropriateness by the organisation, they will reduce monetary and time costs to the organisation through the organisation not needing to replicate that information. Such groups would include eviQ for oncology and Crit-Nurse for Critical care as well as many others. Other sites that would be invaluable for nurses to have access to and be encouraged to use are the CHRISP site for infection control, and the Australian Commission on Safety and Quality in Health Care. These sites, however, relate to specialised areas of interest and would only be of interest to staff when a particular need arises. Nurses have access to online education and

best practice through nursing organisations such as the Australian College of Nursing, and the Australian Nursing and Midwifery Federation. These organisations provide numerous online learning and face-to-face learning opportunities. These opportunities, however, do cost, and therefore possibly need to be supported by organisations. The important concept is that all nurses should be made aware of the many safety and best practice sites that are available to support them in their practice and be given assistance to take advantage of these opportunities.

Information databases are also valuable quick access for nurses wishing to access best practice information. These databases need to be reviewed by the organisation to determine how appropriate they are for staff and to ensure the site is reliable. Accesses to databases possibly need to be purchased by the organisation to allow all staff free access. An example of this is the Joanna Briggs Institute, which provides best practice information and procedural guidelines based on evidence.

These databases are also able to be used as quick reference points for staff when they fall short, and need information quickly to be able to undertake their work. Often staff are needing these points of access, either to gain information, or to reassure themselves that they are providing the best care to patients. As many sites available on the internet do not provide the best information, it is suggested that the organisation promote the evidence-based sites, so they can be assured that the information searched for, on the run, is best practice. Some databases also automatically send emails to users regarding new information or information of special interest, therefore the educational current would be increased for staff, with minimal input from the organisation.

Apps available for mobile devices have varying degrees of usefulness and accuracy. Therefore, as with the other information sources available from the internet, they also need to be reviewed for staff. Apps do have limitations and are generally not the best source of learning when needing more in depth understanding. Apps do, however, offer ways for staff to check knowledge both when learning and when wanting to quickly check knowledge through learning on the run. They can be used as a form of a quizzing tool to ensure

that nurses have an understanding of a subject area. This is particularly the case in such areas as ECG interpretation where feedback is able to be gained after an attempt to interpret the ECG, one app being ECG Guide by QxMD. However many options are available.

It is apparent from this research that most staff are as comfortable using mobile devices, as they are with using a computer, and that they are generally able to access information as required. This extends, for many people, to the use of apps. The varying abilities of staff to use technology requires that if mobile devices are going to be used alternatively with computers, that support should be given to staff in learning how to use these devices and to assist them in gaining confidence with using them.

Nurses identified mobile devices as saving personal resources or as using personal resources efficiently. Currently, nurses are using mobile devices to download information or to receive information from other staff. Most nurses therefore have a high self-efficacy with receiving and to some extent searching for information via their mobile device. It would be advisable to use the comfort of the nurses receiving information and gradually introduce the skills to search different sites recommended for gaining information. Mobile learning can then be expanded to leverage the affordances of mobile devices.

To enable nurses to have the greatest flexibility, learning should be developed to be used with mobile devices as well as laptop and desktop computers. This allows nurses to undertake learning at a time and place suitable to them, which will minimise the imposition of the learning on their personal lives. This involves ensuring that the learning is visible on the small screen of a mobile device, and the user is able to engage with the learning in the same way or similar way as the people on desktop computers. Mobile technologies have many affordances outside of those of a stationary device. These opportunities need to be explored as the nurse's confidence grows with using mobile technologies.

As well as using mobile technologies to access the internet, these technologies could be used, if support was offered, to leverage their greater affordances. By using the affordances of mobile technologies, nurses could have an improved

experience with learning and gain greater understanding. Mobile technologies also have the advantage of being able be used for experiential learning with nurses able to learn and apply what they learn directly in the clinical area, thereby allowing them to reflect on their learning and to consolidate their learning.

Augmented reality holds great possibilities for nursing education, both for undergraduates and graduates. This type of learning allows nurses to be able to practise and to gain feedback from this practice through a mobile device providing information to the nurse dependent on its location (Wu et al., 2012). Nurses will often go long periods without practising a particular procedure. The availability of someone else to supervise them undertaking the practice both in the real situation or in a simulated situation is very limited given the busyness of the ward environment.

With augmented reality, however, nurses are able to independently undertake a procedure and gain feedback regarding their proficiency (Wu et al., 2012). This is valuable for practising nurses for a variety of reasons. Firstly, and the most obvious, is the fact that they are able to practise using a combination of virtual and real world (Antonioli et al., 2014; Bacca et al., 2014; Chicchi Giglioli et al., 2015), which allows a realistic experience. Also it allows the nurse to gain practice away from their peers and thereby not feel embarrassment regarding their knowledge level. The added practice of being able to have this experience is that it will also increase nurses' accuracy and thereby improve patient care (Wu et al., 2012).

Apps that are appropriate for clinical areas need to be promoted and also developed for staff. Studies have shown the benefits of apps developed for particular topic areas (Grabowsky, 2015; Maiden et al., 2013). It is therefore appropriate to promote their use, measure outcomes and further explore nurses' beliefs around their use, in order to build evidence. There are many apps that are currently developed and could be directly applied. Alternatively apps are able to be developed with often limited cost, which will address specific needs of a ward or organisation. As the needs regarding learning will be very different for each level of experience, it again needs to be stressed, that the

learning must be able to be individualised otherwise people's valuable resources are being used to undertake learning that is not furthering their knowledge.

If nurses are gaining knowledge through websites and apps, the organisation will want to ensure that the information is relevant to the work area, is evidence-based, and is reliable. It would therefore be appropriate for organisations to gain access to various sites and apps and that they promote nurses to use and also subscribe to them if they are relevant. This will encourage staff to gain valid information to inform their practice and will give the organisation some control over what their staff are viewing. Recommended YouTube videos are also highly regarded as this gives nurses visual cues for carrying out procedures. Giving the nurse websites that are recommended also saves them time by reducing the time taken to find information, which will in turn make it more likely that nurses will engage with learning.

6.3.3.8 *Geographical Isolation*
Isolated nurses in rural and remote areas have many issues in accessing learning. They generally need to have a far greater motivation to seek out and engage with learning due to the extra personal resources that are needed to attend or connect with learning opportunities.

Isolated nurses have a great need for learning as their knowledge needs to cover many areas, to enable them to care for patients with a wide variety of illnesses and acuity levels. As it is unlikely they will have a great depth of knowledge about every situation that may arise, these nurses also need to have access to quick information. In Queensland, this will often take the form of the Primary Care Clinical Manual (PCCM) where nurses are able to look up best practice according to their assessment of the patient. Other materials are also useful and need to be made available to give them a greater depth of knowledge when it is needed.

Rural and remote nurses are often independent practitioners, with medical assistance available only via phone, Telehealth or from the Flying Doctor. The issues discussed previously all combine to indicate that rural and remote nurses are professionals who require a great skill and knowledge level. Despite their

isolation, they therefore need to have access to continuing learning that will support them in their professional practice.

If rural and remote nurses are to attend face-to-face learning, they will often need to travel a long distance to that learning. This adds time away from work, family, and other obligations within their life. They also have the time that they will be away while attending the education. Together this often adds up to a significant time, meaning they will need to take larger amounts of time away from their personal lives, as well as from work. Being replaced in rural and remote areas is also an issue with extra staff often difficult or impossible to find. Therefore in these areas, adjustments need to be made to normal education and the findings from this research are able to assist, as nurses in these areas have shared how they have overcome these issues.

Learning materials need to be made so they are downloadable to flash drives or devices, so that when internet access is intermittent, nurses are still able to undertake the learning. If a workplace has good access, this may mean allowing the nurses to undertake more learning within the workplace or by downloading the materials for the nurses when the internet is available. If the rural or remote hospital is part of a larger organisation, such as Queensland Health, education can be developed as a group. The learning could then be downloaded and sent to them via various transport or internet options.

Generally these remote areas have teleconference or telehealth facilities available to them, in order to be able to seek guidance from professionals with greater expertise. This could be used to greater advantage, to enable face-to-face education to occur in areas where feedback is needed from the presenter. This would be especially beneficial in the case of less experienced rural and remote nurses, who would need to ask questions to gain clarification and therefore better understanding of the topic being learned. This use of technologies within their everyday practice also raises the nurses' abilities with the use of technologies (digital literacies), and allows nurses the knowledge to further use other technologies for their learning.

6.3.3.9 *Credentialed learning*

Credentialed learning will require the most balancing to occur, as nurses work out for themselves and their families how important the learning will be. They need to weigh up the imposition that the learning will place on their family and lifestyle, together with the cost of the education, and if the benefit gained will be worth the investment in the learning. With credentialed learning, nurses will give this careful consideration prior to undertaking the learning.

If an organisation wants staff to undertake postgraduate education they will need to support staff members in gaining that qualification, and also increase the benefits to staff for undertaking the education. Staff are either driven to specialise in an area (which is the result of most postgraduate education) due to a desire to have the extra knowledge that this will gain them, to gain respect from colleagues and the organisation, or to apply for a higher position. Generally, it will be a mix of those reasons.

The monetary cost of credentialed learning is large, with postgraduate costs running into thousands of dollars, which is often seen by nurses as a barrier to their undertaking the programs. This makes scholarships from organisations valuable by providing financial support to allow nurses to undertake postgraduate courses. Organisations funding some or all of the costs of postgraduate education reduce the personal resources the nurse themselves needs to contribute. This therefore assists nurses when economising, in the balancing process and thereby increasing the potential of their undertaking the further degree.

When undertaking postgraduate education the personal resource of time is significant. This time can be reduced by nurses using multitasking and catching time strategies, however, they are generally not able to target learning as they are working within a set curriculum. They also need to manage their learning environment to enable them to undertake learning in appropriate surroundings with manageable distractions.

To undertake postgraduate learning it is essential that nurses have, at the very least, intermittent access to the internet, as most courses are conducted using a large amount of online content. Some nurses will go to extreme lengths to

accomplish this, by downloading at times when they can get the internet speed or coverage they need or by going to another location to download their materials. This also could be supported by the organisation assisting nurses to access their online materials, either by allowing them to download at work or by organising the materials to be downloaded and sent to them.

Universities could also improve access to students studying online who have poor internet by sending the materials to them on a flash drive or hard drive to allow them to access materials they need, and minimise the interruption caused by the poor access.

6.4   Provide adequate support

Figure 6-5 Model of Workplace learning: Support

It is recommended that nurses be supported through a positive learning environment and through assisting the nurse with payment for learning opportunities and time within work hours to undertake learning. Through this support, the nurse will need to contribute fewer personal resources and will therefore be more likely to engage in learning. Therefore the other domains of expectations, current and economical access are reliant on the domain of support to enable a healthy learning workplace (see Figure 6.5)

6.4.1.1 Culture of the workplace

The culture of the workplace will impact learning as well as the retention of staff and the quality of workplace activities. Some workplaces will allow the individual nurse to flourish whereas others will result in the nurse stagnating (Eraut, 2004). The overall culture of the workplace is therefore crucial in the comfort of nurses and therefore the learning they will involve themselves with.

Nurses will be more likely to achieve and have a belief in their abilities when they are not stressed (Bandura, 1977). Nurses, therefore, need to be supported to believe, not only that they are able to achieve in learning, but they are then able to translate that learning into practice. Support is closely aligned with expectations, in that the culture has the ability to raise expectations. However, it is possible to have a culture with high expectations but that is not supportive of the nurse.

Postive culture is especially important for beginning nurses. Beginning nurses are able to develop into their role more quickly when supported and mentored by senior staff (Eraut, 2007). It was found in this research that all staff need to feel comfortable in their work environment for them to be able to feel they are able to seek advice from others. This supports the nurse's need for a positive culture in the workplace to undertake learning.

6.4.1.2 Financial support

An organisation needs to financially support staff in their learning. If staff are supported through their learning being funded, or being given time away from their work to attend learning, this gives a message that the organisation values continuing learning. The organisation sending this message of value also raises the expectation of nurses in the area regarding their engagement with learning.

It is reported in the literature that in 2013 nurses paid on average Thirty dollars (Australian) per CPD hour. This would mean that each nurse would need to self-fund A$ 600 per year for personal education (Heartfield et al., 2013). This is likely to have increased since then. It was interesting in this research that staff working in areas where they were given money as part of their award for education mentioned cost far less as an issue in regards to learning. This would indicate that for these nurses, there was little requirement to contribute their

personal resources. It was also commented on by nurses, that when the organisation is supportive of their undertaking education and contributed to that education, it made them feel as though they could also contribute more. Therefore, it is proposed that supporting staff through payment of fees for courses would positively encourage nurses to undertake a greater amount of learning.

6.4.1.3 *Supporting educational development*

It was found in this research that organisations often do not provide educators with the time and resources to develop learning resources to be delivered via digital technologies. Therefore educators, through necessity, are confined to providing learning to staff through face-to-face or paper-based packages. Limitations also surround the legalities with the recording of sessions for later use by staff. This is not keeping pace with the learning required and expected by nurses and the knowledge required to provide best practice care to patients.

The lack of preparation time is counterproductive as educators are then providing education to staff through the most expensive means. Face-to-face education is difficult for staff to attend as they need to be released from clinical areas. If they are rostered to be released, they are then called back to the clinical area if it is busy or they are needed to cover sick leave. Staff who work outside of normal hours are also often precluded from participating in education as it is often held during the day.

Face-to-face education is often expensive for the learner for the reasons above, as nurses need to attend in either their own time or be rostered within normal working hours. Education conducted in nurses' private time also has large implications for family, especially for parents, who will need to organise care for children while they are attending (Dowswell et al., 2000). It is important that education be offered equitably to all nurses regardless of their family or work situations. This can be problematic when providing education via face-to-face methods, because the circumstances of some staff will preclude them from participating in the education. It is important to also acknowledge that this can also be an issue with digital education due to competence or access, therefore, when developing any education equity needs to be considered.

171

It is therefore recommended that educators be given time to develop learning that is accessible to all staff. This makes learning equitable in the organisation.

6.4.1.4   Policies and guidelines for use

It is important that organisations learn to manage staff and their use of their mobile devices as well as to develop effective policies around their use. This would enable staff to bring their own device but use them under the guidelines of the organisation. The guidelines should be developed to reflect the policies of the hospital and the policies of the professional groups that people belong to. Such things as privacy need to be addressed to ensure that devices are not used to record any information that is relevant or related to patients as the security of the information cannot be guaranteed.

Infection control is another issue that has been raised with staff bringing their own mobile device to the organisation. This needs to be addressed with staff becoming aware of the need to clean their phones. The mobile device needs to be treated the same as the staff member's pen or other mobile equipment that is taken from one patient to the next.

Even though organisations will state that it is of great importance that staff have the knowledge to undertake their work, it was found in this research that staff are often prohibited from using mobile devices at work. Through looking at the nurses' behaviour, it has been identified that they are not only using mobile technologies but other technologies and other educational methods to overcome obstacles to learning. It would therefore be prudent for organisations to promote what nurses are finding useful in their learning, and assist them in reducing the personal resources required to achieve competence.

6.5   Conclusion

This chapter has proposed the ECES Model that outlines four domains in the workplace that contribute to the level of learning occurring within an organisation. The domains of 1) expectations, 2) current, 3) economical access and 4) support are each dependent on each other. Therefore, each of the domains needs to be healthy within the organisation for a high level of learning to be occurring among nurses.

The ECES Model has been developed from the findings of this research and the literature that was identified as relevant by this research. The Theory of Economising Learning identified the behaviours of nurses in regard to continuing learning and where mobile learning was best used in continuing nurse education. The model identifies areas where the organisation is able to influence and support nurses in undertaking learning. It is supported by evidence from previous research in the areas of motivation, workplace learning, and learning in nursing.

The following chapter will bring together all of the findings of this research in order to inform the formulation of recommendations around CPD for nurses. Opportunities for future research will be proposed while considering some of the limitations of this research.

7 Chapter 7 – Recommendations and Conclusion

7.1 Introduction

The previous chapter presented the ECES model which details the domains that need to be functioning effectively within a workplace to promote a learning environment. This chapter will conclude the thesis through providing an overview of important findings in the research and the implications of these findings. Through using a grounded theory method, how nurses currently use mobile devices for learning in their personal and work lives was explored. This research revealed far more than how nurses use mobile devices, and findings have been used to develop the Theory of Economising Learning. The Theory of Economising Learning adds to existing knowledge through the identification and explanation of the behaviours nurses use to determine if they will engage with a learning opportunity. Additionally, the theory gives insight into nurses' behaviours in overcoming obstacles to their learning. This is an important finding as it enables organisations to understand how to better support employees to continually advance their learning and knowledge. It has been found that the use of varied modes of education, including mobile learning, is valuable in supporting nurses in accessing learning materials and overcoming barriers to learning. To support organisations, the ECES (Expectations, Current, Economical access, and Support) Model has been developed, that will provide a framework for organisations to gauge the health of and improve the learning environment within their organisation.

7.2 A summary of the research
7.2.1 The question

This research set out to develop a theory that would answer the question of where is mobile learning best used in the continuing professional development of registered nurses.. Mobile learning was seen by the researcher as a possibility for improving nurses' access to learning and thereby improving the amount of learning nurses are able to achieve. As the theory developed, the question was answered with data that indicated far more than just the use of mobile learning in continuing professional development. The theory explained what prompts nurses to engage in learning and the balancing process they undertake to decide if they will engage in learning. The

theory then outlines the behaviours that nurses undertake to overcome barriers and engage in the learning process. The outcomes from this research, therefore will contribute to the body of knowledge regarding continuing professional development. This research will inform organisations as to how to support nurses continuing learning in a rapidly changing and dynamic environment.

7.2.2   Methodology

Classic grounded theory was used in this research to explore how nurses are currently using mobile technologies. The objective was to determine how these technologies could best be used within continuing professional development by building on what nurses already did. Grounded theory is an ideal methodology to use when little is known in an area, and it was this that turned out to be valuable within this research. When using grounded theory, unstructured interviews are used to enable the participants the freedom to explore what is important to them (Glaser, 1998). It was through this method of interview that it was found that nurses' main concern was maintaining competence with limited resources. Mobile learning was found to be an aid to economise the personal resources needed to continue learning.

A total of Twenty-seven nurses were interviewed for this research, from a variety of locations with the majority located in Queensland. The nurses worked in both private and public hospitals and in the community. Nurses were also recruited from postgraduate students at the University of Southern Queensland. The nurses were asked about the type of mobile device they owned and used and what they used them for. From these initial interviews it became apparent that nurses viewed eLearning and mobile learning as being the same thing. The nurses within this research discussed mobile devices in relation to the behaviours they use to solve issues related to Economising Learning. The interview questions were then expanded as the research progressed to further explore the concerns that were being raised within the interviews. Some differences initially arose from interviews with less experienced nurses and rural and remote nurses. Further interviews were then sought from other nurses within these two groups, to capture the variances. It was found that the nurses' interviews were surprisingly similar with the areas they were discussing, and the codes were saturated, enabling the researcher to complete the interview stage of the research.

175

Following grounded theory methodology analysis occurred from the first interview, using constant comparison to develop codes and memoing to increase the conceptualisation of the codes. Various conceptualisations were trialled on the codes to discover the theory. The main code went through various iterations of being memoed and written to discover a code that would conceptualise the area. This process was assisted through the use of memoing and towards the end of the research sorting of memos and then further memoing to raise the conceptual level.

The main concern of the nurses was found not to be directly related to mobile learning but rather, how to maintain their competence. The issue that the nurses needed to solve was how to gain the learning they needed in the most economical way possible given limited personal resources.

7.2.3 Background

Nursing has come from a background of being taught through the apprenticeship system (McDonald, 2010). Over time, mainly due to technological advances, the knowledge nurses needed exceeded that which could be accomplished within the hours available in the apprenticeship system (The Department of Health, 2013). The nurses' scope of practice had increased with the advent of technology to more than just a carer, but a professional who needs to be able to analyse data and make recommendations and decisions according to those data (The Department of Health, 2013). Education of nurses transitioned to the tertiary sector in the 1980's (Kako & Rudge, 2008).

The need for postgraduate continuing learning has also increased as nurses need to continually stay updated with current best practice. This is due to the fast pace of change in the health environment and the increasing complexity of patient needs (Tones et al., 2010). Although keeping pace with these changes is crucial to the wellbeing of patients and patient outcomes, barriers remain in the way of nurses' continuing learning (Coventry et al., 2015; Haywood et al., 2013; Katsikitis et al., 2013; Mason, 2013). These issues revolve around the personal resources they have to contribute to their learning.

Despite these barriers, learning within hospitals has remained largely unchanged with face-to-face education being the predominant form of organised learning

176

occurring in many workplaces. This form of education is problematic as it requires nurses to have time away from patient care. This can often not be fitted into the nurses' workday due to significant workloads (Coventry et al., 2015; Kresevic et al., 2011). Nurses coming in to the workplace for learning in their own time, have to personally resource that time. For these nurses, it may mean that they also have the added costs, apart from their time, in regard to childcare and travel (Coventry et al., 2015).

When nurses are rostered to attend education they may not end up attending the education. Staff shortages are often an issue due to increased workload or sick leave. A nurse can be called back to the ward to work and therefore not be able to attend their education (Coventry et al., 2015). Not only does the nurse then miss out on learning, but also receives the message from the senior staff, that education is not important. It could be argued, however, that to maintain safety and optimum patient outcomes, it is essential for staff to improve and keep pace with the knowledge required for best practice to occur.

Since the introduction of a national registration body for nurses, nurses have needed to complete at least twenty hours of further learning per year. This does not need to be organised learning; however, it does need to be able to proven through outcomes if there is not a certificate to quantify the hours spent learning. Therefore, if a nurse is learning through reading articles or listening to podcasts or vodcasts, then they need to document how this has impacted their learning (Nursing and Midwifery Board of Australia, 2015b). This has given nurses a minimum amount of learning to achieve. Completion of additional learning should be encouraged and supported by the organisation.

It is necessary to look forward towards new ways of providing education to nurses that enables and encourages them to learn continuously. This is made more important by the prediction that by 2016 there will be a shortage of nurses in Australia (Mason, 2013). This could mean that nurses will be working short of staff more often and that being released from work for learning will become increasingly more difficult than it currently is. It will also mean that they will have fewer personal resources in relation to time, and due to the pressures of a very demanding job, will be less likely to contribute these personal resources to their learning.

Nurses' lack of personal resources places great importance on the organisation being able to support the nurses, and minimise the personal resources they are required to contribute. By supplying the incentives and assisting them to have knowledge of where and how they can access learning in short blocks, with methods that reduce the personal input of resources, learning engagement could be improved.

Mobile learning has been shown to be an effective means of providing education to nurses when used in conjunction with other methods. The mobile device is able to be used as a means to access the internet and be used in a similar manner as a computer. However, it also has additional affordances that should be explored, to assist with gaining greater access and learning for postgraduate nurses.

7.2.4   The Theory of Economising Learning

The Theory of Economising Learning identifies the behaviours nurses use to resolve their main concern of maintaining competence with limited personal resources. Nurses participate in a continual process of becoming aware of a knowledge need, connecting with a learning opportunity, and balancing their motivational issues with available personal resources to determine if and how they engage with the learning. They will then engage or not engage in learning on the run, pre-emptive learning or credentialed learning. The experience gained as the nurse travels through the process of Economising Learning will then redefine their personal curriculum and inform further learning at the commencement of the next cycle.

Nurses need to first become aware of their need for further learning. This awareness contributes to their motivation to learn and is discussed in terms of motivational factors. This motivation is then balanced against individual personal resources to determine if people will engage in learning. The personal resources that were identified by nurses are time, money, learning environment, and knowledge.

Nurses are using digital devices to economise the personal resources they need to contribute to their learning. By economising, it is not to be implied that nurses are reducing their learning. What nurses are doing is using the devices to get greater value for the personal resources they are contributing. It has been discovered that this is where mobile devices are best used in continuing learning for nurses.

Nurses use mobile technologies to multitask. This has been shown in other studies to be an effective means of learning. They also use mobile devices to alter their learning environment through learning in places where learning does not usually occur, and by taking advantage of small amounts of time they have available. Using these behaviours reduces the impact of learning on their family and home life.

Nurses will use different behaviours or use the behaviours and balance in different ways depending on the learning they are undertaking. It is very different, for example, how the nurse behaves when learning on the run compared with pre-emptive learning. The behaviours of the nurse when undertaking pre-emptive learning and credentialed learning are similar; however, in credentialed learning, the behaviours are more exaggerated.

Work culture impacts significantly on the amount of motivation people will have for learning and will also affect the opportunities they have for learning. A strong Educational current will increase the learning opportunities. Educational current is a descriptor for the amount of educational opportunities people are presented with that are relevant to their area of work and are promoted from within the organisation.

Sifting and sorting is undertaken in conjunction with educational current. Nurses initially sift, to determine if the learning that is flowing past them or to them directly is relevant to their learning needs. Sorting is then engaged in, to place the learning where they are able to access it. They may send it to a home email address to engage with later, or they may print it out to have in paper form. They may also save it to view later on a larger screen or to engage with while multitasking or catching time. It is necessary to note that people need to have a degree of motivation for them use these behaviours, to engage with learning. These behaviours will not be used by a people with low motivation, hence the importance of an organisation that supports and promotes learning as a core part of their business.

Learning on the run occurs for every nurse and is learning that occurs within every day of work provided the workplace has a culture that supports best practice. Learning on the run can occur coincidently, while discussing care with another nurse, or can be due to falling short where nurses need to access knowledge to allow them to take care of the patient. Mobile devices are often used to access knowledge

when falling short, however their use is limited within work areas. If nurses are unable to access information via their phone, they will access information by asking senior nurses or by searching policies and procedures if they have access to them.

7.2.5 Literature review

Following the development of the Theory of Economising Learning, relevant literature was reviewed to situate the theory within the literature. The literature supported the findings of this research that the culture of an organisation will impact on the overall engagement of nurses in learning. The culture of the organisation influences the ability a nurse has to identify deficits in their knowledge (T. Eason, 2010). Organisational support for learning has been identified as important in encouraging nurses to engage with learning. Managers play an important role, influencing both the culture of the work group and emphasising the importance of learning (Eraut, 2004, 2007; Henderson et al., 2013; Katsikitis et al., 2013).

The literature supports nurses' resourcing of learning, with many researchers discussing nurses contributing time and money to support their continued learning, which can potentially be obstacles to learning (Dowswell et al., 2000; Katsikitis et al., 2013; Thoidis & Pnevmatikos, 2014). The literature, however, has not discussed how nurses are overcoming these obstacles to engage with learning. This research identifies the behaviours nurses are using to overcome obstacles and incorporate learning into their lives. Nurses use multitasking, staying connected, and catching time to engage with learning. This is influenced and impacted by the culture, support, and learning current within the organisation. The experience of nurses will impact how they engage with learning and the quantity of learning required.

Benner's theory of novice to expert nurses outlines the different experience levels and attributes of nurses as they become competent (Benner, 2001). Benner's theory is able to be integrated with this study as it was obvious that nurses with different levels of experience managed their balancing and engagement differently. Benner's findings therefore need to be incorporated into the development of learning for postgraduate nurses. The novice nurse or advanced beginner nurse will need far more background information and feedback with learning, whereas the proficient or expert nurse will efficiently target the learning they need and very quickly gain the

knowledge required. For all nurses, motivation is necessary to engage with learning opportunities.

This research found that motivational issues were balanced against personal resources to determine if nurses would engage with learning. Motivation was explored within the literature. The three motivational theories reviewed were self-determination theory (Deci & Ryan, 2008; Gagne & Deci, 2005) 1989), self-efficacy theory (Bandura, 1977, and the theory of planned behaviour (Ajzen, 1991, 2002, 2011; Ajzen et al., 2011).

The aforementioned motivational theories were found to complement this research by further expanding the consideration of what contributes to nurses' motivation when they are balancing for learning. Although nurses are aware of some motivators towards learning such as falling short with knowledge, or being supported by the workplace, issues of how their past would shape their future with regard to motivation were not mentioned in interviews. Additionally, they did not discuss how their environment influenced their motivation. The theories therefore add valuable insight into additional aspects of motivation, and ultimately allow the organisation to plan for and implement strategies that will increase a nurse's motivation to engage with and complete learning. The three theories of motivation listed above provided a significant contribution to the ECES Model.

7.2.6 ECES Model for a healthy learning workplace

The culture of an organisation is crucial to how nurses engage with learning. The culture of the overall work environment is important in predicting how nurses identify with the workplace's values and beliefs. If nurses identify with the organisation's values and beliefs, they will then align themselves with the organisation and take ownership of those values and beliefs (Gagne & Deci, 2005). More specifically, it is essential for a workplace to have a learning culture that is supported and fostered by all levels of staff within the organisation. The ECES Model has been developed from the Theory of Economising Learning and the reviewed literature.

It was found through this research that an organisation is able to improve the culture of learning within a workplace through activity across four domains. The domains

181

being 1) expectations, 2) current, 3) economical access, and 4) support. It is recommended that organisations review their current learning environment through the lens of these domains and implement the suggested strategies to improve the learning culture. Through improving the culture, it is expected that individual nurses' ability and motivation to engage with learning opportunities will increase.

Recommendation One: **The expectations within a work unit should be increased to ensure that the individual's expectation of competence is at a level acceptable to the organisation.** This can be achieved through senior staff within a clinical area modelling a high level of knowledge. This will require the development of senior staff to ensure they are modelling best practice behaviours within the organisation and consideration of the best practice behaviours when employing new staff. The culture of the organisation must be one that nurses want to belong to in order for nurses to adopt the wanted behaviours (Gagne & Deci, 2005).

Recommendation Two: **The current of educational opportunities needs to be at a rate which will reduce the personal resources nurses need to use to access learning materials.** The amount of learning nurses have easy access to increases the amount of learning they will ultimately engage with. Educational current is most easily increased through the use of technologies such as email, Facebook, or collaborative sites such as Google Docs or SharePoint. If using collaborative sites, the learning must still be brought to the attention of the nurses through email or Facebook so that they do not need to search for the learning. Educational current can be increased through face-to-face activities within the work unit, however, will not reach all staff if it is the only method.. Care must be taken to increase the flow of learning opportunities, without it becoming so great that it overburdens nurses.

Recommendation Three: Nurses should be provided with economical access to learning materials that will provide quality learning that the nurse is able to fit into their personal lives.

Learning materials need to be developed in a variety of modes to allow nurses to determine which mode will best meet their needs at that time. Although learning through digital technologies was shown in this study and others, to decrease the personal resources nurses will need to contribute to learning (Brunero & Lamont,

2010), it may not always be the most efficient way of learning or be appropriate for all nurses. Learning, therefore, needs to be offered in a variety of ways, including paper-based and face-to-face delivery. If learning is offered through digital devices, support will need to be provided to nurses not comfortable with the technology. Online learning excludes staff if they are unable to connect to the internet. The learning modules therefore need to be downloadable, to allow these nurses to download their learning materials while at work. The learning is then able to be engaged with at a suitable time and place. Downloading also takes time, and therefore this needs to be provided by the organisation. Opportunities need to be given to employees to enable them to access the materials to download, or the materials should be downloaded for them.

Modularised learning is probably the most important aspect of facilitating nurses to use the behaviours that allow them to fit learning into their lives. Through the development of learning broken into small parts, nurses are able to catch brief periods of time and undertake a learning module through to completion. Thoughtful development would also allow some modules to be developed with multitasking in mind, therefore allowing nurses to engage with the learning when involved with other activities such as travelling or waiting for children. Self-efficacy will improve as the nurses get positive reinforcement of completing individual modules. This positive reinforcement will then improve the likelihood of nurses undertaking more learning (Lorsbach & Jinks, 1999).

Recommendation four: Organisations must provide support in promoting nurses engagement with learning. An organisation is able to support nurses through providing funds for them to allocate to their personal learning. This shares the burden of expense with nurses and enforces the importance of learning. Giving nurses either time within their workday or allowing them to attend learning as part of the work, promotes the idea that learning is important and will encourage nurses to engage with learning. Support must also be provided to educators to enable them to develop materials that best meet the needs of nurses. The benefits of applying these recommendations within the organisation could potentially have significant implications for nurses and ultimately patient outcomes.

7.3 Implications

The theory of economising learning informs the health sector of the ways nurses are using technologies to effectively gain learning while minimising the personal resources they need to contribute. Through the use of this information, organisations will be able to assist the nurse in economising and effectively use the behaviours identified to be able to promote learning and improve the learning culture of an organisation.

This research is vital in enabling organisations to have an understanding of how nurses engage with learning, and as a result have the knowledge to provide support where it will impact on engagement with learning. The ECES Model identifies the domains organisations need to evaluate in order to promote engagement with learning. The promotion of learning in the organisation will be achieved through improvement in the four domains of expectations, current, economical access, and support.

With a predicted shortage of nurses occurring this year (2016), it is critical that learning opportunities be easily accessible to nurses, and that nurses are supported to learn. They need to be able to access knowledge at the point of care, to ensure that care is best practice. Thus strategies must be put in place to ensure nurses have the knowledge required to achieve the best outcomes for patients and for patient safety.

This research is directly applicable to nurses working in clinical areas. This has been directly set out above and in the previous chapter. If the findings from this research are implemented within health organisations, access to and engagement with learning would be improved for post-graduate nurses. This would involve an improvement in learning cultures and an increase in the amount of learning offered to nurses via digital technologies. The application of the theory of economising learning will lead to further research.

7.4 Further research

The substantive area of this research involved registered nurses in Australia. The findings of this research therefore need to be tested in other groups and areas. Research needs to be conducted with registered nurses in other countries to determine if the findings of this research are applicable in those areas. Classic grounded theory is a method that enables the theory to be further developed with

additional data (Glaser, 1998). Therefore, the Theory of Economising Learning could be further developed with additional data from overseas sources. The theory could also be developed further to be inclusive of other professions.

Further research should be undertaken to explore if the Theory of Economising Learning and the ECES Model are applicable to other professions, including other health professions. It is likely that the findings of this research will be broadly applicable. Further research in other disciplines would determine if the same behaviours are occurring in regard to continuing education and further develop the theory. This research would then be of benefit to the wider community.

Although the recommendations in this thesis have identified areas to increase nurses' engagement with learning, these recommendations are yet to be evaluated in the workplace. It would therefore be prudent to use the model to evaluate a workplace and implement changes to improve the domains of expectations, current, economical access and support. The outcomes of these implemented changes would then need to be evaluated. The model would then be refined and additional tools added to further assist organisations in improving learning engagement.

Modularised learning has been proposed from the findings of this research and from the findings of others, however, needs to be further researched to ensure that it is of benefit in supporting nurses to engage with learning. Learning outcomes will need to measured to determine if learning through small modules will result in positive learning outcomes. Further research will determine how learning is best broken into modules and the ideal length of those modules.

Research should be continued into the use of mobile learning in nurses' continuing learning. Most research conducted with mobile learning is in the undergraduate area; however, research that has been conducted with registered nurses has been promising. Of specific interest would be further research into the use of mobile devices with learning on the run and with the use of mobile applications. Just-in-time knowledge is critical in ensuring nurses have access to knowledge where and when they need it.

Further research should also be conducted regarding learning on the run, to determine the safety aspects of nurses being able to access relevant reliable

information, when and where it is needed. It was identified in this research that when nurses fall short they seek advice from senior staff or access computers or mobile devices. It is, however, not clear what a nurse does if these resources are not available and how this impacts on patient outcomes.

Augmented reality could be further researched to take advantage of its broader applications. Presently it is being used in conjunction with mannikans to provide a more realistic experience with feedback for students, however augmented reality is much more than this. Areas outside of nursing need to be explored to inspire new methods of using this technology to benefit both undergraduate and graduate education.

The differing learning styles of nurses were identified by nurses as impacting their learning. Further research should be conducted to explore what the learning styles are, and if they correspond to learning styles identified in literature. The implications of the differing learning styles on engagement with learning, and transference of knowledge, should also be explored.

7.5   Limitations

This study has been conducted with postgraduate nurses within Australia, it is therefore not known if the theory could be generalised across the rest of the world and to other professions. The broader literature in nursing, however, is consistent with the findings of this study and it is therefore likely that the findings will be applicable outside the group studied. Care was taken within this research to ensure that a wide variety of nurses were interviewed, and that nurses of all levels of comfort with technology were recruited. It is possible however, that those that self-selected to participate in the research were those nurses that display driven behaviours toward learning and also those that are more interested in using mobile devices.

7.6   Conclusion

This thesis has given insight into the process of nurses' undertaking learning to maintain competence. Nurses use numerous strategies to maintain competence, and are assisted through being supported by the organisation. Nurses have a limited amount of resources they are willing or able to contribute to their learning, and

therefore need to manage these resources and have the ability to determine their own needs in learning. The organisation has a significant impact on the nurses' ability and motivation to engage in learning, and therefore the culture of the organisation needs to proactively foster nurses to have high levels of knowledge. The use of digital technologies for learning assists nurses to economise the resources they are contributing to their learning and to engage with learning at a time, place, and in a manner that is the most efficient for them. This research will lead to further research in the implementation of this theory into practice.

Reference List

Abate, K. S. (2013). The effect of podcast lectures on nursing students' knowledge retention and application. *Nursing Education Perspectives, 34*(3), 182-185. doi:10.5480/1536-5026-34.3.182

Ahmed, P. S. (2012). The way we teach, the way they learn. *Procedia - Social and Behavioral Sciences, 47*(0), 1554-1557. doi:10.1016/j.sbspro.2012.06.860

Ajzen, I. (1991). The theory of planned behaviour. *Organizational Behavior and Human Decision Processes, 50*(2), 179-211. doi:10.1016/0749-5978(91)90020-T

Ajzen, I. (2002). Perceived behavioral control, self-efficacy, locus of control, and the theory of planned behavior. *Journal of Applied Social Psychology, 32*(4), 665-683. doi:10.1111/j.1559-1816.2002.tb00236.x

Ajzen, I. (2006). *TPB Diagram, retrieved December 11, 2017. Retrieved from http://people.umass.edu/aizen/tpb.diag.html*

Ajzen, I. (2011). The theory of planned behaviour: Reactions and reflections. *Psychology & Health, 26*(9), 1113-1127. doi:10.1080/08870446.2011.613995

Ajzen, I., Joyce, N., Sheikh, S., & Cote, N. G. (2011). Knowledge and the prediction of behavior: The role of information accuracy in the theory of planned behavior. *Basic & Applied Social Psychology, 33*(2), 101-117. doi:10.1080/01973533.2011.568834

Al-Yateem, N. (2012). The effect of interview recording on quality of data obtained: A methodological reflection. *Nurse Researcher, 19*(4), 31-35. doi:10.7748/nr2012.07.19.4.31.c9222

Alavi, A., Bahrami, M., Zargham-Boroujeni, A., & Yousefy, A. (2015). Pediatric nurses' perception of factors associated with caring self-efficacy: A qualitative content analysis. *Iranian Journal of Nursing & Midwifery Research, 20*(2), 232-238.

Altmann, T. K. (2007). An evaluation of the seminal work of Patricia Benner: Theory or philosophy? *Contemporary Nurse, 25*(1-2), 114-123. DOI: 10.5555/conu.2007.25.1-2.114

Antonioli, M., Blake, C., & Sparks, K. (2014). Augmented reality applications in education. *Journal of Technology Studies, 40*(2), 96-107.

APHRA. (2015). *Australian health practitioner regulation agency - about*. Retrieved from http://www.ahpra.gov.au/About-AHPRA.aspx

Artinian, B. M., Giske, T., & Cone, P. H. (2009). *Glaserian grounded theory in nursing research*. New York, NY: Springer.

Australian Bureau of Statistics. (2013). *Australian Social Trends, Doctors and Nurses*. Canberra. Retrieved from http://www.abs.gov.au/AUSSTATS/abs@.nsf/Lookup/4102.0Main+Features 20April+2013#p2

Australian Bureau of Statistics. (2014). Household internet access. Retrieved from http://www.abs.gov.au/ausstats/abs@.nsf/Lookup/8146.0Chapter12012-13

Bacca, J., Baldiris, S., Fabregat, R., Graf, S., & Kinshuk. (2014). Augmented reality trends in education: A systematic review of research and applications. *Journal of Educational Technology & Society, 17*(4), 133-149.

Bandura, A. (1977). Self-efficacy: Toward a unifying theory of behavioural change. *Psychological Review, 84*(2), 191-215. doi:10.1037/0033-295X.84.2.191

Bandura, A. (1989). Regulation of cognitive processes through perceived self-efficacy. *Developmental Psychology, 25*(5), 729-735. doi:10.1037/0012-1649.25.5.729

Benner, P. E. (2001). *From Novice to expert : Excellence and power in clinical nursing practice* (Commemorative ed.). Upper Saddle River, NJ: Prentice Hall.

Billett, S. (2004). Workplace participatory practices conceptualising workplaces as learning environments. *The Journal of Workplace Learning, 16*(6), 312-324. doi:10.1108/13665620410550295

Billett, S. (2008). Learning throughout working life: A relational interdependence between personal and social agency. *British Journal of Educational Studies, 56*(1), 39-58. doi:10.1111/j.1467-8527.2007.00394.x

Birks, M., & Mills, J. (2011). *Grounded theory a practical guide*. Chippenham, England: Sage.

Breckenridge, J., & Jones, D. (2009). Demystifying theoretical sampling in grounded theory research. *The Grounded Theory Review, 8*(2), 113-126.

Brown, M., Lees, S., & Clay, C. (2010). Mobile midwifery education. *The Practising Midwife, 13*(9), 31-32.

Brunero, S., & Lamont, S. (2010). The 'difficult' nurse-patient relationship: Development and evaluation of an e-learning package. *Contemporary Nurse: A Journal for the Australian Nursing Profession, 35*(2), 136-146. doi:10.5172/conu.2010.35.2.136

Buchan, J., Twigg, D., Dussault, G., Duffield, C., & Stone, P. W. (2015). Policies to sustain the nursing workforce: An international perspective. *International Nursing Review, 62*, 162-172. doi:10.1111/inr.12169

Callan, P., Miller, R., Sithole, R., Daggett, M., Altman, D., & O'Byrne, D. (2011). *mHealth education: Harnessing the mobile revolution to bridge the health education & training gap in developing countries*. Retrieved from http://www.mhealthed.org/iheed_report_updates.pdf

Cavus, N., & Ibrahim, D. (2009). m-Learning: An experiment in using SMS to support learning new English language words. *British Journal of Educational Technology, 40*(1), 78-91. doi:10.1111/j.1467-8535.2007.00801.x

Charmaz, K. (2000). Grounded theory objectivist and constructivist methods. In N. K. Denzin & Y. S. Lincoln (Eds.), *Handbook of Qualitative Research* (2nd ed., pp. 509-535). Thousand Oaks, CA: Sage.

Charmaz, K. (2006). *Constructing grounded theory a practical guide through qualitative analysis*. London, Great Britain: Sage.

Cheon, J., Lee, S., Crooks, S. M., & Song, J. (2012). An investigation of mobile learning readiness in higher education based on the theory of planned behavior. *Computers & Education, 59*(3), 1054-1064. doi:10.1016/j.compedu.2012.04.015

Chicchi Giglioli, I. A., Pallavicini, F., Pedroli, E., Serino, S., & Riva, G. (2015). Augmented reality: A brand new challenge for the assessment and treatment of psychological disorders. *Computational & Mathematical Methods in Medicine, 2015*, 1-12. doi:10.1155/2015/862942

Christiansen, O. (2011). The literature review in classic grounded theory studies: A methodological note. *Grounded Theory Review, 10*(3), 21-25.

Chuang, Y.-H., & Tsao, C.-W. (2013). Enhancing nursing students' medication knowledge: The effect of learning materials delivered by short message service. *Computers & Education, 61(1)*. doi:10.1016/j.compedu.2012.09.013

Clarke, A., Lewis, D., Cole, I., & Ringrose, L. (2005). A strategic approach to developing e-learning capability for healthcare. *Health Information & Libraries Journal, 22*, 33-41. doi:10.1111/j.1470-3327.2005.00611.x

Clay, C. A. (2011). Exploring the use of mobile technologies for the acquisition of clinical skills. *Nurse Education Today, 31*(6), 582-586. doi:10.1016/j.nedt.2010.10.011

Clifton, A., & Mann, C. (2011). Can YouTube enhance student nurse learning? *Nurse Education Today, 31*(4), 311-313. doi:10.1016/j.nedt.2010.10.004

Cochrane, T. (2012). Secrets of mlearning failures: Confronting reality. *Research in Learning Technology, The Journal of the Association for Learning Technology (ALT), 20*. doi:10.3402/rlt.v20i0.19186

Cooney, A. (2010). Grounded theory. Choosing between Glaser and Strauss: An example. *Nurse Researcher, 17*(4), 18-28.

Coventry, T. H., Maslin-Prothero, S. E., & Smith, G. (2015). Organizational impact of nurse supply and workload on nurses continuing professional development opportunities: An integrative review. *Journal of Advanced Nursing, 71*(12), 2715-2727. doi:10.1111/jan.12724

Coyne, I. T. (1997). Sampling in qualitative research. Purposeful and theoretical sampling; merging or clear boundaries? *Journal of Advanced Nursing, 26*(3), 623-630. doi:10.1111/1365-2648.ep4514143

Cuddy, C. (2010). Mobile video for education and instruction. *Journal of Electronic Resources in Medical Libraries, 7*(1), 85-89. doi:10.1080/15424060903585784

Deci, E. L., & Ryan, R. M. (2008). Self-determination theory: A macrotheory of human motivation, development, and health. *Canadian Psychology, 49*(3), 182-185. doi:10.1037/a0012801

Dee, C. R., & Reynolds, P. (2013). Lifelong learning for nurses—building a strong future. *Medical Reference Services Quarterly, 32*(4), 451-458. doi:10.1080/02763869.2013.837741

Dowswell, T., Bradshaw, G., & Hewison, J. (2000). Child care responsibilities and participation in continuing education and training: issues relating to motivation, funding and domestic roles. *Journal of Advanced Nursing, 32*(2), 445-453. doi:10.3928/00220124-20070301-03

Dunaway, M. K. (2011). Connectivism learning theory and pedagogical practice for networked information landscapes. *Reference Services Review, 39*(5), 675-685. doi:doi.org/10.1108/10650740910967393

Dunne, C. (2010). The place of the literature review in grounded theory research. *International Journal of Social Research Methodology, 14*(2), 111-124. doi:10.1080/13645579.2010.494930

Eason, J. A. (2009). Field notes: Perspectives from experienced mobile professionals. Education for the whole family. *Healthcare Traveler, 16*(8), 12.

Eason, T. (2010). Lifelong learning: Fostering a culture of curiosity. *Creative Nursing, 16*(4), 155-159. doi:10.1891/1078-4535.16.4.155

Eley, R., Fallon, T., Soar, J., Buikstra, E., & Hegney, D. (2008). The status of training and education in information and computer technology of Australian nurses: A national survey. *Journal of Clinical Nursing, 17(20)*, 2758-2767. Doi: 10.1111/j.1365-2702.2008.02285.x

Eley, R., Fallon, T., Soar, J., Buikstra, E., & Hegney, D. (2009). Barriers to use of information and computer technology by Australia's nurses: A national survey. *Journal of Clinical Nursing, 18*(8), 1151-1158. doi:10.1111/j.1365-2702.2008.02336.x

Eraut, M. (2000). Non-formal learning and tacit knowledge in professional work. *British Journal of Educational Psychology, 70*, 113-136. doi:10.1348/000709900158001

Eraut, M. (2004). Informal learning in the workplace. *Studies in Continuing Education, 26*(2), 247-273. doi:10.1080/158037042000225245

Eraut, M. (2007). Early career learning at work and its implications for universities. *British Journal of Educational Psychology, 2*(4), 113-133.

Farley, H., Murphy, A., & Rees, S. (2012). *Revisting the definition of Mobile Learning.* In H. Carter, M. Gosper and J Hedberg (Ed.) Electric Dreams. Proceedings ASCILITE 2013 Sydney. (pp. 283-287)

Finch, K., Devereux, J., James, J., & Nott, P. (2015). The national broadband network: challenges and opportunities for telecommunications infrastructure planning. *Australian Planner, 52*(1), 71-76. doi:10.1080/07293682.2015.1019757

Francis, K. L., & Mills, J. E. (2010). Sustaining and growing the rural nursing and midwifery workforce: Understanding the issues and isolating directions for the future. *Collegian, 18*(2), 55-60. doi:10.1016/j.colegn.2010.08.003

Freeman, J., & Park, S. (2015). Rural realities: Digital communication challenges for rural Australian local governments. *Transforming Government: People, Process and Policy, 9*(4), 465.

Gagne, M., & Deci, E. L. (2005). Self-determination theory and work motivation. *Journal of Organizational Behaviour, 36*, 331-362. doi:10.1002/job.322

Gibbons, M. C., Fleisher, L., Slamon, R. E., Bass, S., Kandadai, V., & Beck, J. R. (2011). Exploring the potential of Web 2.0 to address health disparities. *Journal of Health Communication, 16*(sup1), 77-89. doi:10.1080/10810730.2011.596916

Glaser, B. G. (1978). *Theoretical sensitivity*. Mill Valley, CA: Sociology Press.

Glaser, B. G. (1992). *Basics of grounded theory analysis*. Mill Valley, CA: Sociology Press.

Glaser, B. G. (1998). *Doing grounded theory: Issues and discussions* (2nd ed.). Mill Valley, CA: Sociology Press.

Glaser, B. G. (2002). Conceptualization: On theory and theorizing using grounded theory. *International Journal of Qualitative Methods, 1*(2), 23-38.

Glaser, B. G. (2012). Generating formal theory. In V. B. Martin & A. Gynnild (Eds.), *Grounded Theory The Philosophy, Method, and Work of Barney Glaser*. Boca Raton FL: Brown Walker Press.

Glaser, B. G., & Strauss, A. L. (1965). *Awareness of Dying*. New York: Aldine de Gruyter.

Glaser, B. G., & Strauss, A. L. (1967). *The discovery of grounded theory: Strategies for qualitative research*. New York: Aldine de Gruyter.

Gobert, F., & Chassy, P. (2008). Towards an alternative to Benner's theory of expert intuition in nursing: A discussion paper. *International Journal of Nursing Studies, 45*, 130-139. doi:10.1016/j.ijnurstu.2007.01.005

Godden, J., & Helmstadter, C. (2009). Conflict and costs when reforming nursing: The introduction of Nightingale nursing in Australia and Canada. *Journal of Clinical Nursing, 18*(19), 2692-2699. doi:10.1111/j.1365-2702.2009.02894.x

Goel, L., Johnson, N., Junglas, I., & Ives, B. (2010). Situated learning: Conceptualization and measurement. *Decision Sciences Journal of Innovative Education, 8*(1), 215-240. doi:10.1111/j.1540-4609.2009.00252.x

Grabowsky, A. (2015). Smartphone use to answer clinical questions: A descriptive study of APNs. *Medical Reference Services Quarterly, 34*(2), 135-148. doi:10.1080/02763869.2015.1019320

Griscti, O., & Jacono, J. (2006). Effectiveness of continuing education programmes in nursing: Literature review. *Journal of Advanced Nursing, 55*(4), 449-456. doi:10.1111/j.1365-2648.2006.03940.x

Gupta, P., Thangaratinam, S., Shehmar, M., Gee, H., Karri, K., Bondili, A., & Khan, K. S. (2012). An electronic training-the-trainers programme: Developing resources for training in educational supervision in obstetrics and gynaecology. *The Obstetrician & Gynaecologist, 14*(1), 39-44. doi:10.1111/j.1744-4667.2011.00087.x

Gustafsson, M., & Borglin, G. (2013). Can a theory-based educational intervention change nurses' knowledge and attitudes concerning cancer pain management? A quasi-experimental design. *BMC Health Services Research, 13*(1), 1-11. doi:10.1186/1472-6963-13-328

Hallburg, L. R.-M. (2006). The "core category" of grounded theory: Making constant comparisons. *International Journal of Qualitative Studies on Health and Well-being, 1*, 141-148. doi:10.1080/17482620600858399

Haywood, H., Pain, H., Ryan, S., & Adams, J. (2013). Continuing professional development: Issues raised by nurses and allied health professionals working in musculoskeletal settings. *Musculoskeletal Care, 11*(3), 136-144. doi:10.1002/msc.1033

Heartfield, M., Morello, A., Harris, M., Lawn, S., Pols, V., Stapleton, C., & Battersby, M. (2013). E-learning competency for practice nurses: An evaluation report. *Australian Journal of Primary Health, 19*(4), 287-291. doi:10.1071/PY13033

Heath, H., & Cowley, S. (2004). Developing a grounded theory approach: A comparison of Glaser and Strauss. *International Journal of Nursing Studies, 41*(2), 141-150. doi:10.1016/s0020-7489(03)00113-5

Henderson, A., Briggs, J., Schoonbeek, S., & Paterson, K. (2011). A framework to develop a clinical learning culture in health facilities: Ideas from the literature. *International Nursing Review, 58*(2), 196-202. doi:10.1111/j.1466-7657.2010.00858.x

Henderson, A., Schoonbeek, S., & Auditore, A. (2013). Processes to engage and motivate staff. *Nursing Management - UK, 20*(8), 18-25.

Hernandez, C. A. (2009). Theoretical coding in grounded theory methodology. *Grounded Theory Review, 8*(3), 51-66.

Holton, J. A. (2008). Grounded theory as a general research methodology. *Grounded Theory Review, 7*(2), 67-93 .

Holton, J. A. (2010). The coding process and its challenges. *The Grounded Theory Review, 9*(1), 21-40.

Holton, J. A. (2011). The autonomous creativity of Barney G. Glaser: Early influences in the emergence of classic grounded theory. In V. Martin & A. Gynnild (Eds.), *Grounded Theroy The Philosophy, Method, and Work of Barney Glaser* (pp. 201-224). Boca Raton, FL: Brown Walker Press.

Howatson-Jones, L. (2004). Designing web-based education courses for nurses. *Nursing Standard, 19*(11), 41-44.

Johnson, L., Adams, S., & Cummins, M. (2012). *The NMC Horizon Report: 2012 Higher Education Edition*. Retrieved from http://www.nmc.org/pdf/2012-horizon-report-HE.pdf

Jones, A. L., Fahrenwald, N., & Ficek, A. (2013). Testing Ajzen's theory of planned behaviour for faculty simulation development. *Clinical Simulation in Nursing, 9*(6), e213-e218. doi:10.1016/j.ecns.2012.01.005

Junco, R., & Cotten, S. R. (2012). No a 4 u: The relationship between multitasking and academic performance. *Computers & Education, 59*, 505-514. doi:10.1016/j.compedu.2011.12.023

Kako, M., & Rudge, T. (2008). Governing nursing: Curriculum as a rhetorical vehicle using South Australian nursing schools from the 1950s onwards as an

illustrative case. *Contemporary Nurse: A Journal for the Australian Nursing Profession, 30*(2), 142-155. doi:10.5172/conu.673.30.2.142

Katsikitis, M., McAllister, M., Sharman, R., Raith, L., Faithfull-Byrne, A., & Prevyzi, E. (2013). Continuing professional development in nursing in Australia: Current awareness, practice and future directions. *Australian Nursing Profession, 45*(1), 31-45. doi:10.5172/conu.2013.45.1.33

Kazlauskas, A., & Robinson, K. (2012). Podcasts are not for everyone. *British Journal of Educational Technology, 43*(2), 321-330. doi:10.1111/j.1467-8535.2010.01164.x

Kenny, R., Van Neste-Kenny, J., Burton, P., Park, C., & Qayyum, A. (2012). Using self-efficacy to assess readiness of nursing educators and students for mobile learning. *The International Review of research in Open and Distance Learning, North America, 13*(3), 277- 296. Retrieved from <http://www.irrodl.org/index.php/irrodl/article/view/1221/2273>

Kidd, T., Kenny, A., & Meehan-Andrews, T. (2012). The experience of general nurses in rural Australian emergency departments. *Nurse Educucation Practice, 12*(1), 11-15. doi:10.1016/j.nepr.2011.05.001

Kop, R., & Hill, A. (2008). Connectivism: Learning theory of the future or vestige of the past. *International Review of Research in Open & Distance Learning, 9*(3). doi: 10.19173/irrodl.v9i3.523

Kresevic, D., Burant, C., Denton, J., Health, B., & Kypriotakis, G. (2011). The use of multimodal strategies for distance education in the GRECCS,. *Gerontology & Geriatrics Education, 32*(1), 54-79. doi:10.1080/02701960.2011.550216

Kukulska-Hulme, A., & Traxler, J. (2005). *Mobile learning a handbook for educators and trainers*. London and New York: Routledge, Taylor & Francis.

Lee, T. W., & Ko, Y. K. (2010). Effects of self-efficacy, affectivity and collective efficacy on nursing performance of hospital nurses. *Journal of Advanced Nursing, 66*(4), 839-848. doi:10.1111/j.1365-2648.2009.05244.x

Little, A., Medhanyie, A., Yebyo, H., Spigt, M., Dinant, G.-J., & Blanco, R. (2013). Meeting community health worker needs for maternal health care service delivery using appropriate mobile technologies in Ethiopia. *PLoS ONE, 8*(10), e77563. doi:10.1371/journal.pone.

Locke, K. (1996). Rewriting the discovery of grounded theory after 25 years? *Journal of Management Inquiry, 5*(3), 239-245. doi:10.1177/105649269653008

Lorsbach, A., & Jinks, J. (1999). Self- efficacy theory and learning environment research. *Learning Environment Research, 2*(2), 157-167. doi:10.1023/A:1009902810926

Lyneham, J., Parkinson, C., & Denholm, C. (2009). Expert nursing practice: A mathematical explanation of Benner's 5th stage of practice development. *Journal of Advanced Nursing, 65*(11), 2477-2484. doi:10.1111/j.1365-2648.2009.05091.x

MacNeill, H., Telner, D., Sparaggis-Agaliotis, A., & Hanna, E. (2014). All for one and one for all: Understanding health professionals' experience in individual versus collaborative online learning. *Journal of Continuing Education in the Health Professions, 34*(2), 102-111. doi:10.1002/chp.21226

Maiden, N., D'Souza, S., Jones, S., Muller, L., Pannese, Lucia., Pitts, Kristine., Prilla, M., Pudney, K., Rose, M., Turner, I., Zachos, K. (2013). Computing

technologies for reflective, creative care of people with dementia. *Communications of the Association for Computing Machinery, 56*(11), 60-67. doi:10.1145/2500495

Marrocco, G. F., Wallace Kazer, M., & Neal-Boylan, L. (2014). Transformational learning in graduate nurse education through podcasting. *Nursing Education Perspectives, 35*(1), 49-53. doi:10.5480/10-421.1

Mason, J. (2013). *Review of Australian government health workforce programs.* Retrieved from www.health.gov.au/internet/main/publishing.nsf/Content/D26858F4B68834 EACA257BF0001A8DDC/$File/Review%20of%20Health%20Workforce%2 0programs.pdf

McDonald, L. (2010). *The Nightingale system of training.* Paper presented at the American Association for the History of Nursing and European Nursing History Group, Windsor. Retrieved from www.uoguelph.ca/~cwfn/nursing/nightingale-system-of-training.htm

McGhee, G., Marland, G. R., & Atkinson, J. (2007). Grounded theory research: Literature reviewing and reflexivity. *Journal of Advanced Nursing, 60*(3), 334-342. doi:10.1111/j.1365-2648.2007.04436x

McLoughlin, C., & Lee, M. J. W. (2009). *Personalised learning spaces and self-regulated learning: Global examples of effective pedagogy.* In Same Places, different spaces. Proceedings ascilite Auckland 2009. http://www.ascilite.org.au/conferences/auckland09/procs/mcloughlin.pdf

Minicucci, D. S., Schmitt, M. H., Dombeck, M. T., & Williams, G. C. (2003). Actualizing Gadow's moral framework for nursing through research. *Nursing Philosophy, 4*(2), 92-103. doi:10.1046/j.1466-769X.2003.00129.x

Mulvey, R. (2013). How to be a good professional: Existentialist continuing professional development (CPD). *British Journal of Guidance & Counselling, 41*(3), 267-276. doi:10.1080/03069885.2013.773961

Nelson, J. M., Cook, P. F., & Ingram, J. C. (2014). Utility of the theory of planned behavior to predict nursing staff blood pressure monitoring behaviours. *Journal of Clinical Nursing, 23*(3/4), 461-470. doi:10.1111/jocn.12183

Nelson, S. (2001). Hairdressing and nursing: Presentation of self and professional formation in colonial Australia. *Collegian, 8*(2), 28-31. doi:10.1016/S1322-7696(08)60006-2

NSW Government State Records. (2015). *Archives In Brief 118 - Nurses.* Retrieved from http://www.records.nsw.gov.au/state-archives/guides-and-finding-aids/archives-in-brief/archives-in-brief-118

Nursing and Midwifery Board of Australia. (2015a). *Continuing professional development.* Retrieved from http://www.nursingmidwiferyboard.gov.au/Codes-Guidelines-Statements/FAQ/CPD-FAQ-for-nurses-and-midwives.aspx

Nursing and Midwifery Board of Australia. (2015b). Nursing and midwifery board of Australia, *about.* Retrieved from http://www.nursingmidwiferyboard.gov.au/About.aspx

Osman, M., El-Hussein, M., & Cronje, J. C. (2010). Defining mobile learning in the higher education landscape. *Educational Technology and Society, 13*(3), 12-21.

Ousey, K., & Roberts, D. (2013). Improving access to CPD for nurses: The uptake of online provision. *British Journal of Community Nursing, 18*(2), 78-83. doi:10.12968/bjcn.2013.18.2.78

Pardue, K. T., & Morgan, P. (2008). Millennials considered: A new generation, new approaches, and implications for nursing education. *Nursing Education Perspectives, 29*(2), 74-79.

Parry, D. (2011). Mobile perspectives: On teaching mobile literacy. *EDUCAUSE Review, 46*(2), 14-16. Retrieved from http://www.educause.edu/EDUCAUSE+Review/EDUCAUSEReviewMagazineVolume46/iMobilePerspectivesOnteachingi/226160

Pearson, D. J., & Lucas, B. J. (2011). Engagement and opportunity in clinical learning: Findings from a case study in primary care. *Medical Teacher, 33*(12), e670-e677. doi:10.3109/0142159X.2011.611402

Pitts, K., Pudney, K., Konstantinos, Z., Maiden, N., Krogstie, B., Jones, S., . . . Turner, I. (2015). Using mobile devices and apps to support reflective learning about older people with dementia. *Behaviour and Information Technology, 34*(6), 613-631. doi:10.1080/0144929X.2015.1015165

Pluye, P., Grad, R., Repchinsky, C., Jovaisas, B., Johnson-Lafleur, J., Carrier, M.-E., . . . Légaré, F. (2013). Four levels of outcomes of information-seeking: A mixed methods study in primary health care. *Journal of the American Society for Information Science & Technology, 64*(1), 108-125. doi:10.1002/asi.22793

Rajpaul, K. (2015). The use of smart technology to deliver efficient and effective pressure-damage education. *British Journal of Nursing* 24(20): S4-S12 15p.

Roebuck, D. B., Siha, S., & Bell, R. (2013). Faculty usage of social media and mobile devices: Analysis of advantages and concerns. *Interdisciplinary Journal of E-Learning and Learning Objects, 9*, 171-192. Retrieved from http://www.ijello.org/Volume9/IJELLOv9p171-192Roebuck0859.pdf

Ross, K., Barr, J., & Stevens, J. (2013). Mandatory continuing professional development requirements: What does this mean for Australian nurses. *BMC Nursing, 12*(1), 9-15. doi:10.1186/1472-6955-12-9

Rowbotham, M., & Owen, R. M. (2015). The effect of clinical nursing instructors on student self-efficacy. *Nurse Education in Practice, 15*(6), 561-566. doi:10.1016/j.nepr.2015.09.008

Schmitt, T. L., Sims-Giddens, S. S., & Booth, R. G. (2012). Social Media Use in Nursing Education. *Online Journal of Issues in Nursing, 17*(32. doi:10.3912/OJIN.Vol17No03Man02

Schweitzer, D. J., & Krassa, T. J. (2010). Deterrents to nurses' participation in continuing professional development: An integrative literature review. *The Journal of Continuing Education in Nursing, 41*(10), 441-447. doi:10.3928/00220124-20100601-05

Scott, H. (2012). Conducting grounded theory interviews online. In V. B. Martin & A. Gynnild (Eds.), *Grounded theory: The philosophy, method, and work of Barney Glaser*. Boca Raton, Florida: Brown Walker.

Sharples, M., Taylor, J., & Vavoula, G. (2007). A Theory of Learning for the Mobile Age. In R. Andrews & C. Haythornthwaite (Eds.), *The SAGE Handbook of E-learning Research*. London, United Kingdom: SAGE Publications, Ltd.

Siemens, G. (2005). Connectivism: A learning theory for the digital age. *International Journal Of Instructional Technology and Distance Learning, 2*(1), 3-10. Retrieved from http://www.itdl.org/Journal/Jan_05/article01.htm

Simmons, O. E. (2012). Why classic grounded theory. In V. B. Martin & A. Gynnild (Eds.), *Grounded theory: The philosophy, method, and work of Barney Glaser*. Boca Raton, Florida: Brown Walker.

Stern, P. N. (1980). Grounded theory methodology: Its uses and processes. *Journal of Nursing Scholarship, 12*(1), 20-23. doi:10.1111/j.1547-5069.1980.tb01455.x

Stern, P. N. (2007). On solid ground: Essential properties for growing grounded theory. In A. Bryant & K. Charmaz (Eds.), *The Sage Handbook of Grounded Theory*. London England: Sage.

Strauss, A. L., & Corbin, J. M. (1990). Basics of qualitative research: Grounded theory procedures and techniques. Newbury Park, CA: Sage.

Strauss, A. L., & Corbin, J. M. (1998). *Basics of qualitative research: Techniques and procedures for developing grounded theory* (2 ed.). Thousand Oaks, CA: Sage.

The Department of Health. (2013). *Appendix iv: History of Commonwealth involvement in the nursing and midwifery workforce.*   Retrieved from http://www.health.gov.au/internet/publications/publishing.nsf/Content/work-review-australian-government-health-workforce-programs-toc~appendices~appendix-iv-history-commonwealth-involvement-nursing-midwifery-workforce

Thoidis, L., & Pnevmatikos, D. (2014). Non-formal education in free time: Leisure-or work-orientated activity. *International Journal of Lifelong Education, 33*(5), 657-673. doi:10.1080/02601370.2014.918197

Tones, M., Pillay, H., & Fraser, J. (2010). The influence of demographics and work related goals on adaptive development for work related learning amongst private hospital employees. *Contemporary Nurse: A Journal for the Australian Nursing Profession, 36*(1/2), 143-158. doi:10.5172/conu.2010.36.1-2.143

Toode, K., Routasalo, P., Helminen, M., & Suominen, T. (2014). Hospital nurses' individual priorities, internal psychological states and work motivation. *International Nursing Review, 61*(3), 361-370. doi:10.1111/inr.12122

Torres Kompen, R., Monguet, J. M., & Brigos, M. (2015). Constant change. *Quarterly Review of Distance Education, 16*(2), 119-128.

Traxler, J. (2005). *Defining mobile learning.* Paper presented at the IADIS International Conference Mobile Learning.

Vallerand, R. J., Pelletier, L. G., & Koestner, R. (2008). Reflections on self-determination theory. *Canadian Psychology, 49*(3), 257-262. doi:10.1037/a0012804

Washington, O. G., & Moxley, D. P. (2013). Self-efficacy as a unifying construct in nursing-social work collaboration with vulnerable populations. *Nursing Inquiry, 20*(1), 42-50. doi:10.1111/nin.12012

Wells, M. I., & Dellinger, A. B. (2011). The effect of type of learning environment on perceived learning among graduate nursing students. *Nursing Education Perspectives, 32*(6), 406-410.

Williams, A. K., Parker, V. T., Milson-Hawke, S., Cairney, K., & Peek, C. (2009). Preparing clinical nurse leaders in a regional Australian teaching hospital. *Journal of Continuing Education in Nursing, 40*(12), 571-576. doi:10.3928/00220124-20091119-04

Wu, P.-H., Hwang, G.-J., Su, L.-H., & Huang, Y.-M. (2012). A context-aware mobile learning system for supporting cognitive apprenticeships in nursing skills training. *Journal of Educational Technology & Society, 15*(1), 223-236.

Glossary of terms

Advanced Practice – A nurse working within their scope of practice, but at a level greater than is traditional.

Continuing professional development – learning that occurs to maintain and increase knowledge in relation to the nurse's role.

Course – a single unit of study.

Credentialed learning – learning with a formal curriculum that results in a qualification.

Digital literacy – A person's competence in and knowledge of using digital technology.

Digital technologies – electronic devices including the hardware and software used to store, transfer, and interact with data.

eLearning – learning mediated via an electronic device.

Mobile learning - "the processes (both personal and public) of coming to know through exploration and conversation across multiple contexts amongst people and interactive technologies" (Sharples, Taylor, & Vavoula, 2007, p. 225). Also refer to discussion in 2.3.1

Mobile phone – a mobile device used to make phone calls and SMS. It may have other functions.

Mobile platforms – operating system of the mobile device.

Online learning – learning using the internet.

Post Registration nurse – is a person who holds a qualification in nursing that allows them to register as a registered nurse and is registered with APHRA.

Smart phone – has greater functionality than a mobile (feature) phone and will have the capacity to connect to the internet.

Appendix A: USQ Ethics Approval

Memorandum

To:	Sharon Rees
CC:	Dr Helen Farley, Supervisor
From:	Manager, Research Integrity and Governance
Date:	23 April 2013
Re:	**Ethics application**

The Chair of the USQ Human Research Ethics Committee (HREC) has assessed your revised ethics application and determined that the proposal meets the requirements of the *National Statement on Ethical Conduct in Human Research (2007)*. Your project has been endorsed and full ethics approval granted.

Project Title	Identifying how nurses currently interact with mobile devices to inform the introduction of mobile learning into continuing education – a grounded theory study
Approval no.	H13REA054
Expiry date	31 December 2014
HREC Decision	**Approved as submitted**

The standard conditions of this approval are:

    (a) conduct the project strictly in accordance with the proposal submitted and granted ethics approval, including any amendments made to the proposal required by the HREC

    (b) advise (email: ethics@usq.edu.au) immediately of any complaints or other issues in relation to the project which may warrant review of the ethical approval of the project

    (c) make submission for approval of amendments to the approved project before implementing such changes

    (d) provide a 'progress report' for every year of approval

    (e) provide a 'final report' when the project is complete

    (f) advise in writing if the project has been discontinued.

For (c) to (e) forms are available on the USQ ethics website: http://www.usq.edu.au/research/ethicsbio/human For (d) and (e), diarise the applicable dates *now t*o ensure compliance with reporting requirements.

Appendix B: St Vincent's Ethics Approval

16 August 2013

Mrs Sharon Rees
PhD Student
ADFI USQ West Street
Toowoomba QLD 4350

Dear Mrs Rees

Identifying how nurses currently interact with mobile devices, to inform introduction of mobile learning into continuing education – a grounded theory study. (HREC #13/05)

Thank you for submitting the above research project for single ethical review. This project was considered by the St Vincent's Health & Aged Care Human Research Ethics Committee at its meeting held on 27 May 2013.

I am pleased to advise you that the St Vincent's Health & Aged Care Human research Ethics Committee has granted ethical approval of this research project.

The nominated participating site/s in this project is/are:

St Vincent's Private Hospital Toowoomba
St Vincent's Private Hospital Brisbane
Holy Spirit Northside Private Hospital

[Note: If additional sites are engaged prior to the commencement of, or during the research project, the Coordinating Principal Investigator is required to notify St Vincent's Health & Aged Care Human Research Ethics Committee. Notification of withdrawn sites should also be provided to the St Vincent's Health & Aged Care Human Research Ethics Committee in a timely fashion.

The approved documents include:

Document	Version	Date
NEAF	Version 2	17 July 2013

Approval of this project from St Vincent's Health & Aged Care Human Research Ethics Committee is valid from 9 August 2013 subject to the following conditions being met:

UNDER THE STEWARDSHIP OF MARY AIKENHEAD MINISTRIES

Appendix C: Queensland Health Ethics Approval

17 June 2013

Human Research Ethics Committee

7.7   Metro North Hospital and Health Service

7.8   The Prince Charles Hospital

**7.9   Administration Building, Lower Ground
Rode Road, Chermside QLD 4032**

Mrs Sharon Rees

Australian Digital Futures Institute

University of Southern Queensland

West Street

TOOWOOMBA QLD 4350

Dear Mrs Rees,

**Re: HREC/13/QPCH/144: Identifying how nurses currently interact with
mobile devices, to inform introduction of mobile learning into
continuing education – a grounded theory study**

Thank you for submitting your Low Risk project for ethical and scientific review
under the Single Ethical Review Process (SERP). I am pleased to advise that The
Prince Charles Hospital Human Research Ethics Committee reviewed your

submission and upon recommendation, the Chair has granted final approval for your low risk project.

This HREC is constituted and operates in accordance with the National Health and Medical Research Council's (NHMRC) National Statement on Ethical Conduct in Human Research (2007), NHMRC and Universities Australia Australian Code for the Responsible Conduct of Research (2007) and the CPMP/ICH Note for Guidance on Good Clinical Practice.

I am pleased to advise that the Human Research Ethics Committee has granted approval of this research project. The documents reviewed and approved on 16 June 2013 include:

Document	Version	Date
Low Risk Application (AU/10/65A2115)		
Protocol		March 2013
Master Participant Information Sheet & Consent Form (Interview)	2	18 June 2013
Master Participant Information Sheet & Consent Form (Blog Post) - Online	2	18 June 2013
Master Interview Guide	1	16 May 2013
Flyer	1	17 May 2013

This information will be tabled at the next HREC meeting held 11 July 2013, for noting.

Please note the following conditions of approval:

1. The Principal Investigator will immediately report anything which might warrant review of ethical approval of the project in the specified format, including any unforeseen events that might affect continued ethical

acceptability of the project.

2. Amendments to the research project which may affect the ongoing ethical acceptability of a project must be submitted to the HREC for review. Major amendments should be reflected in revised documents. Further advice on submitting amendments is available from http://www.health.qld.gov.au/ohmr/documents/researcher_userguide.pdf

3. Amendments to the research project which only affect the ongoing site acceptability of the project are not required to be submitted to the HREC for review. These amendment requests should be submitted directly to the Research Governance Office/r (by-passing the HREC).

4. Proposed amendments to the research project which may affect both the ethical acceptability and site suitability of the project must be submitted firstly the HREC for review and, once HREC approval has been granted, then submit to the RGO.

5. The HREC is notified, giving reasons, if the project is discontinued at a site before the expected date of completion.

6. The Principal Investigator will provide a report to the HREC at the completion of the study in the specified format.

7. The Human Research Ethics Committee or Hospital and Health Service Administration may inquire into the conduct of any research it approves for a specific site; or which the Committee has approved when conducted outside at multiple Hospital & Health Service sites.

HREC approval is valid for the duration of the project, from date of this letter.

Should you have any queries about the HREC's consideration of your project please contact the Executive Officer on 3139 4500. The HREC terms of Reference, Standard Operating Procedures, membership and standard forms are available from http://www.health.qld.gov.au/ohmr/html/regu/regu_home.asp.

You are reminded that this letter constitutes ethical approval only. **You must not commence this research project at a site until separate authorisation from the Hospital and Health Service CEO or Delegate of that site has been obtained.**

A copy of this approval must be submitted to the relevant Hospital & Health Services Research Governance Officer/s or Delegated Personnel with a completed Site Specific Assessment (SSA) Form for authorisation from the CEO or Delegate to conduct this research at the site/s listed below.

The HREC wishes you every success in your research.

Yours faithfully

Dr Russell Denman

Chair

HUMAN RESEARCH ETHICS COMMITTEE

METRO NORTH HOSPITAL AND HEALTH SERVICE

Appendix:
List of approved Sites:

No.	Site
1	Royal Brisbane & Women's Hospital
2	The Prince Charles Hospital
3	Harvey Bay Hospital
4	Cairns Hospital
5	Miles Hospital
6	Toowoomba Hospital

Appendix D: Recruitment flyer

How do you feel about
Mobile Technology?

Mobile technology is currently becoming a greater part of our lives. Mobile learning has been found to be beneficial in nursing education, as nurses can learn anytime and anywhere, and apply their learning more directly to their practice.

My name is Sharon and I am a nurse completing my PhD at The University of Southern Queensland. As part of my PhD I would like to find out, how comfortable nurses are using mobile technology, what they currently use it for, and the best way to introduce it into post graduate nursing education.

If you are a Registered Nurse and are willing to share your views in an interview, please contact me on the email or phone number below.

Interviews will take 20-30 minutes and be via phone, Skype or face to face, whatever is most suitable for you.

Alternatively please contribute to my blog

adfi.usq.edu.au/projects/mobile-nurse/

Ethics Approval Number: USQ H13REA054, Qld Health HREC/13/QPCH/144 St. Vincent's HREC#13/05

Phone: 0448840988
Blog: adfi.usq.edu.au/projects/mobile-nurse/ start
Email: Sharon.Rees@usq.edu.au

Photo from: http://www.flickr.com/photos/katerha/with/5428715420/

Version 1 17/05/2013

Appendix E: Plain language statement and consent form

The University of Southern Queensland

Participant Information Sheet - Interviews

HREC Approval Number:

Full Project Title: Exploring how nurses interact with mobile devices in order to inform the use of mobile learning in continuing nurse education: a grounded theory study

Principal Researcher: Sharon Rees

Other Researcher(s): Dr Helen Farley

I would like to invite you to take part in this research project to help inform the introduction of mobile learning into continuing nurse education.

1.   Procedures

The aim of this research is to develop a framework that will guide the introduction of mobile learning into continuing nurse education. The development of the framework will be achieved through gaining an extensive knowledge from nurses, of the important issues regarding mobile technology and how nurses interact with it in their lives.

To participate in this research we request that you participate in a 15-30 minute informal interview. The interview may take longer depending on what you discuss, but will definitely be no longer than 1 hour. The interview will be conducted over Skype, or phone if you prefer. If you are not comfortable with either of these, you may also meet face to face with the interviewer. You will be asked what you consider to be mobile technology and what technology you own. You will also be asked how you use this technology and for what purpose. By answering these questions and adding other information you think important, you will be helping inform the most appropriate uses for mobile technology in continuing nurse education.

The interviews will not be taped; however notes will be taken during the interview. By providing your email address I will provide you with the completed thesis from the research.

2.   Voluntary Participation

Participation is entirely voluntary. If you do not wish to take part you are not obliged to. If you decide to take part and later change your mind, you are free to cancel the interview prior to commencing the interview or stop the interview when in progress. Any information already obtained from you will not be able to be withdrawn as interviews and data analysis will be occurring simultaneously.

Your decision whether to take part or not to take part, or to take part and then withdraw, will not affect your relationship with the University of Southern Queensland and/or the hospital in which you are employed.

Thank you for considering taking part in this research

Sharon Rees

PhD candidate
Faculty of Science
University of Southern Queensland
Ph: +61 7 4631 2760 | Email: Sharon.Rees@usq.edu.au

Dr Helen Farley
Project Leader & Senior Lecturer (Digital Futures)
Australian Digital Futures Institute
Ph: +61 7 4631 1738 | Email: Helen.Farley@usq.edu.au

220
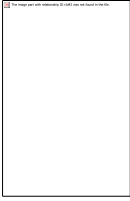
The University of Southern Queensland

Consent Form - Interviews

HREC Approval Number:

TO: Research Participants

Full Project Title: Development of a framework for evaluating the impact and sustainability of mobile learning initiatives in higher education

Principal Researcher: Sharon Rees

Other Researcher(s): Dr Helen Farley, Dr Clint Moloney

- I have read the Participant Information Sheet and the nature and purpose of the research project has been explained to me. I understand and agree to take part.

- I understand the purpose of the research project and my involvement in it.

- I understand that I may withdraw from the research project at any stage and that this will not affect my status now or in the future.

- I confirm I am over 18 years of age.

- I confirm I am a Registered Nurse.

- I understand that while information gained during the study may be published, I will not be identified and my personal results will remain confidential.

If the interview is to be conducted via skype or telephone please sign, scan and email the consent form to Sharon.Rees@usq.edu.au or reply via email stating 'I have read the Participant Information sheet and consent form and agree to participate in an interview' along with your preferred email address

Name of participant…………………………………………………………….......

Email Address…………………………………………………………………….......

Signed…………………………………………………….Date…………………….

If you have any ethical concerns with how the research is being conducted or any queries about your rights as a participant please feel free to contact the University of Southern Queensland Ethics Officer on the following details.

Ethics and Research Integrity Officer
Office of Research and Higher Degrees
University of Southern Queensland
West Street, Toowoomba 4350

Appendix F: Original interview questions

The University of Southern Queensland

Interview Guide

Instructions:

Introduce participant and interviewer

I would like to discuss with you what mobile devices you have and how you use them.

I will not be taping your interview today, but will take notes as we talk.

Information from this interview will not be shared in an identified way with anyone else. Your information will not be shared in any way with your employer apart from the finished report. You will not be identifiable in the report.

Please feel free to cease the interview at any time, I appreciate the time you are able to give. If you change your mind about participating during the interview, please say so and the interview will cease immediately.

Do you agree to proceed with the interview and do you have any conditions that you would like to state up front?

No – thank and close

Yes and conditions – proceed and agree to conditions

Yes – proceed with interview

Is there anything that you want to know about the research project before we start our conversation?

(Any questions raised by the interviewee will be answered by the interviewer)

Start interview

Sample of questions:

1. Do you have any mobile technology such as phones or tablets?
2. What do you use these devices for?
3. Tell me about using the devices; how are they to use?
4. What are your thoughts on mobile learning?

Thank participant for their time and close.