ATHABASCA UNIVERSITY

IT VARIES! BLENDED EDUCATIONAL SUPPORT FOR

RURAL REGISTERED NURSES' JUST-IN-TIME LEARNING ACTIVITIES

BY

JEAN SIMPSON-SMITH

A DISSERTATION

SUBMITTED TO THE FACULTY OF GRADUATE STUDIES

IN PARTIAL FULFILLMENT OF THE REQUIREMENTS FOR THE DEGREE OF

DOCTOR OF EDUCATION IN DISTANCE EDUCATION

FACULTY OF HUMANITIES AND SOCIAL SCIENCES

ATHABASCA, ALBERTA

SEPTEMBER 11, 2023

Athabasca University
Faculty of Graduate Studies

Approval of Dissertation

The undersigned certify that they have read the dissertation entitled

IT VARIES! BLENDED EDUCATIONAL SUPPORT FOR RURAL REGISTERED NURSES' JUST-IN-TIME LEARNING ACTIVITIES

Submitted by:

Jean Simpson-Smith

In partial fulfillment of the requirements for the degree of

Doctor of Education in Distance Education

The examination committee certifies that the dissertation
and the oral examination is approved

Supervisor:
Dr. Debra Hoven
Athabasca University

Committee Members:
Dr. Levina Yuen
Athabasca University

Dr. Kimberley Lamarche
Cape Breton University

External Examiner:
Dr. Sandra Davidson
University of Calgary

September 25, 2023

Dedication

This dissertation is lovingly dedicated to my family. It has been a busy four and a half years and this manuscript would not have been completed without their love and continuous support. To my husband Pete, you have been my understanding and guiding partner along this journey and have spent countless hours supporting me and celebrating my accomplishments along the way – I thank you with every bit of my being. To my wonderful daughters Caitlin and Courtney, your words of encouragement and willingness to embark in conversations about my work have helped me to move closer to realizing my dream of generating knowledge to support and enhance the practices of rural registered nurses (RNs). To my parents Francis and Lily Simpson, this dissertation is lovingly dedicated to your memory. From a young age, you instilled within me the want to learn, a desire to forge my own path through challenging the status quo, and a determination to accomplish whatever I set my mind to – all attributes needed to complete a Doctor of Education in Distance Education degree.

In addition, I wish to dedicate this dissertation to the rural RNs who graciously and willingly agreed to share their stories about their just-in-time learning activities with me. You have entrusted me with honoring and respecting your stories, carrying your ideas forward, and ensuring that your perceptions of the blended educational resources needed to effectively support rural RNs' just-in-time learning activities are kept at the forefront of conversations with rural stakeholders. To you, I offer my gratitude and humble appreciation. Each of you has provided recommendations for rural stakeholders that outline strategies for improving the just-in-time learning activities of rural RNs. My hope is that these initiatives will be implemented to support rural RNs' just-in-time learning activities, and in turn, their ability to confidently practice in a capable and safe manner.

Abstract

Just-in-time learning using blended educational resources has become a challenging norm for registered nurses (RNs) working in the rural hospital workplace. Consistent change and lack of adequate in-house educational supports in the rural hospital context have contributed to the creation of a complex and increasingly chaotic workplace of unanticipated elements and unknowns. In this context, and typically with only their ingenuity to support them, RNs often quickly and in-the-moment self-determine their learning needs and the blended educational resources needed to meet these needs. This type of learning, conceptualized as just-in-time learning, is frequently used by rural RNs to maintain the generalist practice expertise needed to provide capable, safe patient care. However, there is a paucity of research about this phenomenon. Thus, using a constructivist interpretive description research design, I explored the extent to which RNs in the rural hospital workplace perceive that blended educational resources support their just-in-time learning activities. Understanding this phenomenon through this exploration has assisted me in generating recommendations to inform rural hospital educational, organizational, and policy initiatives aimed at the just-in-time learning activities of rural RNs, and in turn, can support these RNs in confidently providing capable, safe patient care.

Keywords: Rural Registered Nurses, Just-In-Time Learning, Education, Blended Educational Resources, Nursing Practice

Table of Contents

List of Tables

List of Figures

Table 1

Definition of Terms

Advanced Beginner Registered Nurse (RN)	An RN who "…can demonstrate a marginally acceptable performance" (Benner, 1982, p. 403). A new RN graduate who is experiencing the weight of being legally and professionally responsible for patients; they typically rely on textbook accounts of how to manage patient care and may have difficulty recognizing subtle variations in patient symptoms and changes (Benner, 1984, 2004).
Blended Educational Resources	Human, online, or hardcopy learning resources that can be accessed (as a singular entity or in an assortment of combinations) online, by telephone, or in-person. They include, but are not limited to, the Internet; evidence-based online or hardcopy resources such as policies, protocols, and clinical practice guidelines (Kosteniuk et al., 2019); peers, managers, clinical nurse educators, nurses in specialty units, and on- or off-site healthcare professionals (Smith & Vandall-Walker, 2017).
Capability	One's confidence in their ability "…to take effective and appropriate action, explain what they are about, live and work effectively with others, and continue to learn from their experiences, both as individuals and in association with others, in a diverse and changing society" (Stephenson, 1992, p. 2).
Chaotic Situation	A situation that is disorganized and lacking order (Merriam-Webster, 2022) with no time to think and high tension (Snowden & Boone, 2007). It "is the realm of unknowables…(the relationships between cause-and-effect are impossible to determine because they shift constantly and no manageable patterns exist—only turbulence" (Snowden & Boone, 2007, p. 5)—see the section in Chapter 2, Informal Learning.
Clinical Nurse Educator	"The RN in a clinical educator role promotes and facilitates staff in providing safe, competent, and ethical care through developing and implementing a variety of learning opportunities such as orientation programs, preceptorship and mentoring programs, and continuing education opportunities in the work environment" (College of Registered Nurses of Alberta [CRNA], 2021, p. 10).
Clinical Resource Nurse	The RN in a clinical resource nurse role encourages and facilitates a workplace culture that supports nursing staff to practice capably, safely, and within AHS guidelines through providing on-site continuing education and professional development (H. Halladay, personal communication, June 19, 2023). This learning support

	includes mentorship, just-in-time education, simulations, and how to effectively access blended educational resources. The overarching aim of this role is to promote staff retention.
Complex Situation	A situation in which there many unknown unknowns (there are no right answers), wherein the whole is far more than the sum of its parts (Snowden & Boone, 2007). In this situation, there are several competing ideas that require creative and innovative approaches to solving problems — see the section in Chapter 2, Informal Learning.
Complicated Situation	A situation in which there are known unknowns (multiple right answers with a clear relationship between cause-and-effect but not everyone can see it), which require an expert to diagnose them (Snowden & Boone, 2007) — see the section in Chapter 2, Informal Learning.
Competencies	"The integrated knowledge, skills, judgment and attributes required of a nurse to practise safely and ethically" (Canadian Council of Registered Nurse Regulators, 2013, p. 20).
Continuing Competence	"The ongoing ability of a nurse to integrate and apply the knowledge, skills, judgment and personal attributes required to practice safely and ethically in a designated role and setting. Maintaining this ongoing ability involves a continual process linking the code of ethics, standards of practice and life-long learning. The nurse reflects on [their] practice on an ongoing basis and takes action to continually improve that practice" (Canadian Nurses Association [CNA], 2000, p. 9).
Competent RN	An RN who "…begins to see [their] actions as long-range goals or plans" (Benner, 1982, p. 404). Developing their skillset and grasp of the clinical environment is typically incremental and dependent on experiential learning and how varied and complex their patient situations are (Benner, 1984, 2004).
Continuing Professional Development	The systematic maintenance, improvement, and continuous acquisition and/or reinforcement of the life-long knowledge, skills and competencies of health professionals needed for meeting patient, health service delivery, and individual professional learning needs (Executive Agency for Health Consumers, 2013). It includes both formal and informal learning activities.
Continuing Professional Education	The ongoing development beyond initial training for professional membership, specialist knowledge and expertise, and accountability (Bierema & Eraut, 2004). It involves continual lifelong learning about new theories, research, evidence-based

	practice approaches, and advanced specialty knowledge (Cervero & Daley, 2016).
Debriefing	A formal or informal process that occurs after a scenario/situation has occurred and enables discussing, assessing, and reflecting on practice so that learning can occur (Nursing Times, 2023).
Disciplinary Heritage	The disciplinary knowledge a researcher possesses that shapes every aspect of the research they are conducting (Thorne, 2008, 2016). It influences the research questions asked, the literature accessed, the language used, as well as the design decisions made.
Disorder	Occurs when simple, complicated, complex, and chaotic situations unfold simultaneously, and it is unclear which of these situations is predominant (Snowden & Boone, 2007)—see Chapter 2, Informal Learning section, p. 36.
Experiential Learning	"…the process whereby knowledge is created through the transformation of experience" (Kolb, 1984, p. 38). It includes the process of adaptation and learning; that knowledge is a transformation process, continuously being created and recreated; and that learning transforms experience in both its objective and subjective forms (Kolb, 1984). According to Kolb, the learner engages in a concrete experience, uses reflective observation to think about the experience, engages in abstract conceptualization to learn from the experience, and uses active experimentation to try out what they have learned.
Expert RN	An RN who "…uses their enormous background experience and intuition to zero in on the problem" (Benner, 1982, p. 404). The expert RN is response-based and uses their practical wisdom to intuitively provide care while being attuned to the complexity of the situation (Benner, 1984, 2004). This attunement enables their flexible fusion of thought, feeling, and action.
Formal Learning	"Intentionally constructed learning activities within the domain of human resource development" (Streumer & Kho, 2006, p. 12). Involves any one of the following characteristics: a prescribed learning framework, an organized learning event or package, the presence of a designated teacher or trainer, the award of a qualification or credit, and the external specification of outcomes (Eraut, 2000).
Heutagogy	"The study of self-determined learning, heutagogy is a learner-centered education theory founded on the key principles of learner agency, self-efficacy, capability, metacognition (knowing how to learn), and reflection" (Blaschke, 2018, p. 129).

Human Resource Development	A "process of developing and unleashing expertise for the purpose of improving individual, team, work process, and organizational system performance" (Swanson & Holton III, 2009, p. 4).
Incidental Learning	A type of informal learning that is unintentional or unplanned and results from the experiences of other activities (Marsick et al., 2006).
Informal Learning	Can occur in education institutions but is typically not classroom-based nor highly structured and control of learning rests primarily in the mind of the learner (Marsick & Watkins, 1990/2015).
Interpretive Description	A qualitative research methodology created by Thorne et al. (1997) "to provide a strategic [set] of qualitative methods to meet the knowledge needs of the applied and practice disciplines" (Thorne, 2016, p. 11).
Just-In-Time Education	A strategy for providing individuals with the educational tools they need exactly when they need them (Witherspoon, 2019). Also referred to as just-in-time training (Witherspoon, 2019) or real-time training (Zhu et al., 2021).
Just-In-Time Learning	A type of informal learning wherein individuals or groups determine their learning needs quickly and in-the-moment (Brandenburg & Ellinger, 2003). Can occur anywhere, anytime, in any way, just-in-time as the need arises, and is personalized to the learner's skillset (Riel, 2000). Subsumes Yoderwise's (2020) term in-real-time learning, wherein RNs learn simultaneously alongside rapidly evolving knowledge.
Just-In-Time Learning Activities	The thinking and actions of a person or group of people when engaging in just-in-time learning.
Novice Nurse	A nurse who has "…no experience with the situation in which they are expected to perform tasks" (Benner, 1982, p. 403). The novice is typically a student nurse who requires clear parameters and guidelines for providing care (Benner, 1984, 2004). In the rural Alberta hospital workplace, a novice nurse may be a student nurse who is working as an undergraduate nurse employee and is responsible for managing the care of a mix of medical, surgical, and palliative patients.
Obvious or Simple Situation	A situation of known knowns (clear cause-and-effect relationships are easily discernible by everyone; the right answer is self-evident because there are repeating patterns and consistent events that enable decisions based on evidence (Snowden & Boone, 2007) —

	see Chapter 2, Informal Learning section.
Point of Care	Any location where patient care is provided.
Practitioners	A mix of healthcare providers including rural RNs, nurse educators, urban RNs, enrolled nurses, allied health workers, nursing assistants, pharmacists, physicians, and social workers.
Pre-Briefing	A pre-brief is conducted before an event happens and is used to outline the expectations, goals, and responsibilities of individuals, as well as identify potential risks and ways to mitigate them (Nursing Times, 2023).
Professional Workplace	A workplace context in which there are regulated members who have acquired a formal body of knowledge through postsecondary education, an authority based on specialist knowledge and expertise, and an accountability to their clients through adherence to a code of conduct (Bierema & Eraut, 2004).
Proficient RN	An RN who "…can envision a situation as a whole rather than in its singular parts" (Benner, 1982, p. 404). This RN has learned to situate themselves appropriately in a variety of different patient care contexts (Benner, 1984, 2004).
Propositional or Declarative Knowledge	"Awareness and understanding of factual information about the world – *knowing that* in contrast to *knowing how*. Its necessary and sufficient conditions are that the information must be true, that the person must believe it to be true, and that the person must be in a position to know it" (Colman, 2015, n. p.). "It can be expressed through spoken and written language using declarative sentences and can thus be acquired through verbal communication" (Colman, 2009, n. p.).
Reflection	Characterized by single-loop and double-loop learning (Blaschke & Brindley, 2011; Mezirow, 1990; Schön, 1983). In single loop learning, the learner reflects on what is learned. In double-loop learning, the learner uses metacognitive skills to reflect on the process of how they learned and how this learning impacts them individually.
Registered Nurses (RNs)	"Self-regulated health-care professionals who work autonomously and in collaboration with others to enable individuals, families, groups, communities and populations to achieve their optimal levels of health…" (CNA, 2015, p. 5).
Rural	Includes towns and municipalities deemed rural by jurisdictional health authorities (Smith, 2014). Typically, these communities are

	below populations of 10,000 people (duPlessis et al., 2001), but in some cases can be greater than 10,000 but less than 55,000 people (MacLeod & Place, 2015).
Rural Hospital Workplace	A hospital designated by Alberta Health Services (AHS) or Alberta Covenant Health (CH) as a rural facility in which emergency services are provided on one unit and a mix of generalist services on a separate unit (Smith, 2014). This mix can include, but is not limited to, medical, palliative, pediatric, emergent, and in some facilities, also surgical, obstetrical, and constant or specialty care.
Rural Registered Nurse (Rural RN)	Any regulated RN educated at the diploma level or beyond who performs a generalist practice in the rural hospital workplace (Smith, 2014).
Self-directed Learning	"Learning projects undertaken by individuals (alone or as part of a group) without the assistance of an educator (teacher, instructor, facilitator), but can include the presence of a resource person who does not regard [themselves] as an educator" (Schugurensky, 2000, p. 3).
Self-efficacy	An individual's belief in or perception of their ability to achieve an outcome (Bandura, 1977).
Self-regulation of RNs	Adherence "to the self-regulatory requirements of jurisdictional legislation to protect the public…" (CRNA, 2019, pp. 7-8).
Tacit Knowledge	A person's uncodified skills, ideas, and experiences that are difficult to verbally articulate (Eraut, 2004a).
Virtual Care Technologies	"…telephone and cell phone communication, email, video and audio conferencing, instant messaging – e. g. texting, online chat" (British Columbia College of Nurses & Midwives, 2023).
Workplace Learning	A formal, informal, or incidental process that constitutes the "human change or growth that occurs primarily in activities and contexts of work" (Fenwick, 2001, p. 4). It is messy and enacted as multiple objects or as a series of different objects that exist in different states and are patched together through manufactured linkages (Fenwick, 2008).

Chapter 1. Introduction

Just-in-time (Riel, 2000) or in-real-time learning using blended educational resources has become a challenging norm for registered nurses (RNs) across many sectors of nursing (Yoderwise, 2020). However, it is especially difficult for RNs working in the rural hospital workplace because of lack of in-house educational support services (Canadian Association for Rural and Remote Nursing [CARRN], 2020; MacLeod, Kulig et al., 2019; Sedgwick & Pijl-Zieber, 2015; Smith & Vandall-Walker, 2017). Therefore, I conducted a qualitative study using Thorne's (2008, 2016) interpretive description research methodology to explore the extent to which blended educational resources in the rural hospital workplace support RNs' just-in-time learning activities. Interpretive description afforded a distinct advantage for my study because it enabled me to generate a meaningful scholarly product based on rural RNs' perceptions of their specific needs surrounding their just-in-time learning activities using blended educational resources within their practice context. I interviewed 13 rural RNs from across Alberta, Canada to learn about the blended educational resources they perceived have worked well to support their just-in-time learning activities. Gaining this knowledge has enabled me to generate recommendations about these resources that can be used by rural hospital staff, educators, managers, administrators, and policymakers, as well as post-secondary institutions to enact positive change to the current policies, procedures, and practices surrounding the just-in-time learning activities of RNs in the rural hospital workplace.

This chapter is broken into several segments to outline my study. Initially, I provide insight into my personal practice experiences that led to conducting this research inquiry. Next, I explain the origins and characteristics of just-in-time learning (Brandenburg & Ellinger, 2003), after which I define the two following constructs: just-in-time learning activities of rural RNs and the blended educational resources associated with these activities. I then describe the roles

and responsibilities of rural generalist RNs, followed by the problems surrounding their just-in-time learning activities. Next, I provide a depiction of my conceptual framework; a brief explanation of my conceptual, substantive, and theoretical assumptions related to the study; and an explication of two theories underpinning the study. I then state my research aim, overarching research question, and sub-questions, after which I emphasize the significance of the study. I close by providing a chapter summary and an outline of the remainder of the dissertation. I also want to highlight that when I searched for information to conduct this study, I found many current articles that included the work of seminal authors. Therefore, I have accessed and relied on these seminal works (and added some newer versions) as I have assembled and articulated my ideas in this study.

Personal Practice Experiences That Led to Conducting This Study

My interest in understanding the learning experiences of rural RNs has been an ongoing journey since I first started working in the Alberta rural hospital workplace in 1986. However, it was not until I started teaching in a Bachelor of Science in Nursing (BScN) degree program in 2008 and studying for a Master of Nursing (MN) degree in 2009, that I began to think about the challenges associated with learning how to practice as an expert generalist RN. To adequately describe my journey to conducting this study, I begin by providing some background information about how I had learned the rural generalist RN role, which educational resources had supported that learning, and how these supports drastically changed during the 1990s.

When I began in the rural hospital workplace, I learned the generalist role from expert RNs, staff, and physicians. Experiential learning and peer support were both fundamental to becoming an expert generalist. It was not easy but there were numerous in-person and on-site formal educational resources that had supported me in attaining and maintaining my skill set. Lengthy new hire orientations, in-services and workshops, equipment fairs, and in-the-moment

assistance from a full-time clinical nurse educator (CNE) were some of these resources. Then the government health reforms of the 1990s led to significant reductions in the educational supports in Alberta's rural hospitals, which made it challenging for me and others to maintain our skill sets. We often had to travel to acquire and maintain certifications that supported the breadth and depth of knowledge we needed to work capably and safely. Admittedly, in 1999 I quit nursing because I was disheartened with the challenges it presented. Nevertheless, in 2003 I returned to two rural hospital workplaces and persevered until 2008. However, I again became frustrated with the lack of educational resources and was thrilled when an opportunity to teach in a local BScN degree program arose.

Teaching inexperienced nursing students about rural nursing brought me to realize the depth and breadth of knowledge required to practice as an expert generalist RN. Previously, I had not considered the magnitude of learning needed to enact the role. It became much clearer to me when I began studying at the master's level and conducted a study to explore the transition experiences of new BScN graduates into the rural acute care setting (Smith, 2014; Smith & Vandall-Walker, 2017). From this study, I recognized that the educational challenges I had thought were inherent to the two rural hospitals in which I had worked were like many others across the province — the supports to continuing education were dismally lacking.

Since conducting my MN study, I have spent many hours in the rural hospital workplace working alongside and conversing with RNs, physicians, managers, and staff while teaching and learning with BScN students. I have also been leading teams of BScN faculty who work with students in several other rural hospitals. From these experiences, I have consistently heard and noticed three common themes that have contributed to creating a complex and increasingly chaotic rural hospital workplace. Advancing technologies have disrupted the routinization of rural RN practices because they contribute to repeated changes in the policies,

procedures, and protocols governing these practices, a factor exceedingly apparent during the

coronavirus disease-19 (COVID-19) pandemic. Restructuring of healthcare services within

Alberta have resulted in fewer rural RNs caring for more patients, but whose treatment plans are

typically more complex. Finally, lack of in-person educational resources has caused rural RNs,

out of necessity, to frequently use just-in-time learning activities and blended educational

resources to support acquiring and maintaining their day-to-day and specialty practice expertise.

Origins and Characteristics of Just-In-Time Learning

Just-in-time learning, a term conceptualized by Riel (2000), is a subjective concept (Paul,

1997) that is not well defined in the literature as it does not refer to a particular learning theory or

method (Brandenburg & Ellinger, 2003). It is a type of informal learning that originated from the

manufacturing world in the early 2000s as an "evolutionary response to the demands of a

knowledge-driven and speed-oriented marketplace" (Brandenburg & Ellinger, 2003, p. 311). It

differs from just-in-time education or training, which are formal educational strategies for

providing individuals with the tools necessary to learn in-the-moment when they need them

(Witherspoon, 2019). As an informal learning strategy, just-in-time learning is dynamic and

adaptive, not controlled nor contrived by learning designers (Brandenburg & Ellinger, 2003). It

is personalized to the learner's skillset, and can occur anywhere, anytime within the 24-hour

spectrum, and in any way depending on the situation (Brandenburg & Ellinger, 2003).

More recently, Yoderwise (2020) used the term in-real-time learning to describe RNs'

learning practices during the COVID-19 pandemic. She claimed that the unknowns and

unanticipated elements of the pandemic have contributed to RNs beginning a shift with certain

facts about managing the care of patients experiencing COVID-19 but have needed to quickly

learn new facts about that care during their work shift because of rapidly evolving knowledge

surrounding the disease (Yoderwise, 2020). However, Yoderwise's definition closely resembles

Brandenburg and Ellinger's (2003) meaning of just-in-time learning. Thus, for the purposes of this study, the term just-in-time learning will be used throughout as it subsumes the term in-real-time learning. Notably, just-in-time learning of RNs within the context of the rural hospital workplace entails an array of activities. Therefore, I now provide two constructs to describe the just-in-time learning of rural RNs: *just-in-time learning activities* and the *blended educational resources* linked to these activities.

Constructs: Just-In-Time Learning Activities, Blended Educational Resources

In the rural hospital workplace, just-in-time learning activities using blended educational resources have become the norm for RNs to manage their practices and to provide capable, safe patient care. In this context, just-in time learning activities refer to the thinking and actions of an RN (or group of people including an RN) when engaging in learning quickly and in-the-moment, regardless of whether the need to learn is for a simple, complicated, complex, or chaotic situation. I define these situations using Snowden and Boone's (2007) criteria and provide a personal practice example of each in the Informal Learning section of Chapter 2.

During just-in-time learning activities, rural RNs may access (as a singular entity or in an assortment of combinations) human, online, or hardcopy resources to support their learning. Human resources include, but are not limited to, workplace peers, managers, CNEs, nurses in specialty units, physicians, and on- or off-site healthcare professionals (Smith & Vandall-Walker, 2017). Online resources consist of electronic medical records and electronic health records – Connect Care (Canada Health Infoway, 2020); and Internet search engines – Google. They also include evidence-based policies, protocols, standards, regulatory tools, clinical practice guidelines, nursing or medical journals and textbooks, practice support resources – NurseOne, research databases, and summated online/electronic information (Kosteniuk et al., 2019). Furthermore, rural RNs access virtual care technologies to support their just-in-time

learning – email, video/audio conferencing, instant messaging via text or online chat (British Columbia College of Nurses & Midwives, 2023); and YouTube videos and mobile applications (Curran et al., 2019). Hardcopy resources include evidence-based policies, protocols, standards, regulatory tools, clinical practice guidelines, nursing or medical textbooks and journals; and summated printed information (Kosteniuk et al., 2019). However, to fully comprehend the relationship between rural RNs' just-in-time learning activities using blended educational resources and their rural generalist RN practice also requires understanding the roles and responsibilities of that practice.

Roles and Responsibilities of Rural Generalist Registered Nurses

Rural generalist RNs provide care to a mix of diverse patients across the lifespan including, but not limited to, individuals requiring medical, emergency, palliative, constant or special care, and in some facilities, also those needing obstetric, pediatric, or surgical care (CARRN, 2020; MacLeod, 1999; MacLeod, Kulig et al., 2019; Scharff, 2013; Smith & Vandall-Walker, 2017). This generalist practice requires RNs to lead and mentor generalist teams, collaborate with other members of the health care team, and sometimes manage the entire hospital (MacLeod, 1999; MacLeod, Kulig et al., 2019; Scharff, 2013; Smith & Vandall-Walker, 2017). They are also expected to perform infrequently enacted tasks capably and safely and to provide care to patients arriving from urban specialty units who have rare conditions or require specialty treatments they may not have previously encountered. Moreover, they are expected to use their own ingenuity to learn how to use new or updated equipment and to independently implement new practice guidelines capably and safely.

To effectively enact the broad range of responsibilities outlined above requires rural generalist RNs to possess self-efficacy and strong self-reflection skills. These attributes support capably maintaining breadth and depth of nursing knowledge and task-based skills; exercising

expert clinical judgment; being creative, innovative, and resourceful; adapting to unknown or unanticipated events; working autonomously in constant care, labor and delivery, or emergency room (ER) areas; and fulfilling the duties of other members of the interprofessional team who are off- site or off-duty (MacLeod, Kulig et al., 2019; Smith, 2014; Smith & Vandall-Walker, 2017). Although some generalist responsibilities may be like those of other RNs, there are system factors in the rural hospital workplace that make fulfilling them problematic.

The Problem

The problem is that blended educational resources in the rural hospital workplace do not always adequately support rural RNs' learning activities (CARRN, 2020, MacLeod, Kulig et al., 2019) and thus, their ability to consistently practice capably and safely (Sedgwick & Pijl-Zieber, 2015; Smith & Vandall-Walker, 2017). The rural hospital workplace is a context of simple to complex situations that can quickly become chaotic (Crawford, 2019; Smith, 2014; Smith & Vandall-Walker, 2017) due to an array of unknowns and unanticipated elements associated with the diversity of services provided and the lack of educational resources needed to effectively support providing these services (CARRN, 2020; MacLeod, Kulig et al., 2019; Sedgwick & Pijl-Zieber, 2015; Smith & Vandall-Walker, 2017). A variety of situations can occur on any given shift in the rural hospital workplace, which I elaborate on in Chapter 2, Informal Learning.

For the purposes of this study, the term rural refers to communities with a population base of up to 55,000 people, a determination set by national rural researchers MacLeod and Place (2015). The outdated standard population base previously set by duPlessis et al. (2001) was 10,000 people. In addition and during the proposal stage of this study, I had defined rural hospital workplace as a hospital designated by Alberta Health Services (AHS) or Covenant Health (CH), the healthcare authorities in the province in which the study was conducted, as a rural facility in which emergency services are provided on one unit and a mix of generalist

services on a separate unit (Smith, 2014; Smith & Vandall-Walker, 2017).

I had carefully chosen the above construct of *rural hospital* because I found that existing definitions of the term did not attend to the variations in rural hospitals located in the province of Alberta. When conducting previous research within the context of the Alberta rural hospital workplace (Smith & Vandall-Walker, 2017), I learned that some hospitals allocated as rural hospitals in the province did not require RNs to acquire and maintain a generalist practice expertise because they were organized and staffed with a variety of units like urban facilities. However, during recruitment of participants for this study, I learned that while there are two models of rural hospitals in the province (i. e. generalist and urban type), there are also three types of staffing models, which differs from when I conducted my previous study. In both hospital models, some RNs maintain a generalist practice, while others are only expected to work in one area. Hence, the focus for my study shifted during participant recruitment to include both generalist and non-generalist RNs and their just-in-time learning activities in rural hospital workplaces in AHS and CH authorities. I adjusted my focus when it became apparent that the new staffing models were a means for rural stakeholders to promote recruitment and retention of RNs in rural hospital workplaces. Next, I differentiate between rural RN non-generalist and generalist practices.

A non-generalist rural RN is expected to work in one area of the rural hospital – a narrow scope of practice that requires engaging in continuing education to obtain the knowledge and skill set to work in that area – not unlike working on an urban unit. That area may be the emergency department (ED), an obstetrical unit, a surgical unit, or a medical/surgical/palliative unit dependent on the model of hospital in which they are working. The generalist rural RN is expected to work in most areas of the rural hospital – a broad scope of practice that requires engaging in extensive continuing education to stay current across a multitude of nursing fields (i.

e. medical, palliative, emergency, paediatrics, and in some facilities also surgery/or obstetrics).

Common to both types of practice is the need for RNs to self-determine their learning needs and the resources that can meet these needs. Although rural RNs may have access to a wide variety of formal (see Appendix A) and informal blended educational resources to attain and maintain their practice expertise (Kulig et al., 2015), using these resources typically requires engaging in just-in-time learning activities. This shift to self-determined learning and the requirement to often use informal just-in-time learning activities to manage day-to-day and specialty nursing practices, rather than formal professional development activities, stems from significant changes that have occurred in the rural hospital workplace over the past 30 years. These changes include proliferation of technology that has steadily contributed to advancing and evolving medical treatments, specialty care (Yoderwise, 2020), and constantly changing policies, protocols, and procedures (Smith & Vandall-Walker, 2017); professionalization of nursing practice that requires RNs to independently develop and maintain their practice expertise (LaRiviere, 2019; Nelson & Purkis, 2004); and rationing of continuing professional education and human resource development supports, which has reduced RNs' access to on-site formal learning resources (LaRiviere, 2019). In Chapter 2 Canadian Regulated Rural Registered Nurses, I provide a more in-depth synthesis of these changes and challenges. Next, I depict the conceptual framework of my study (see Figure 1) and describe my conceptual, theoretical, and substantive assumptions related to the study, as well as explain its theoretical underpinnings.

Conceptual Framework, Assumptions, and Theoretical Underpinnings

When a researcher determines what research questions, methodology, and methods to use to investigate a phenomenon, they must ensure that all flow from their philosophical assumptions about the nature of reality (Creswell, 2007). As follows, I provide a brief overview of my philosophical and substantive assumptions as they relate to my study. In Chapter 3 Theoretical

Forestructure, I elaborate on and further locate these assumptions in my study.

The phenomenon I explored is rural RNs' perceptions of the extent to which blended educational resources support their just-in-time learning activities. This phenomenon aligns with my naturalistic ontological assumption that the nature of reality is subjective and multiple, wherein one's view or perception of reality is contingent upon others' cultures, what is happening in-the-moment, and the context of the situation (Creswell, 2007). To understand my participants' perceptions, I used a research design that is consistent with this philosophical assumption, which enabled me to mutually construct meaning about the phenomenon through interacting with the participants and their data (Creswell, 2007). An exploratory descriptive qualitative research methodology based in the naturalistic paradigm allowed me to get close to the participants through the data collection and analysis techniques I used (Creswell, 2007).

Figure 1

Conceptual Framework of the Study
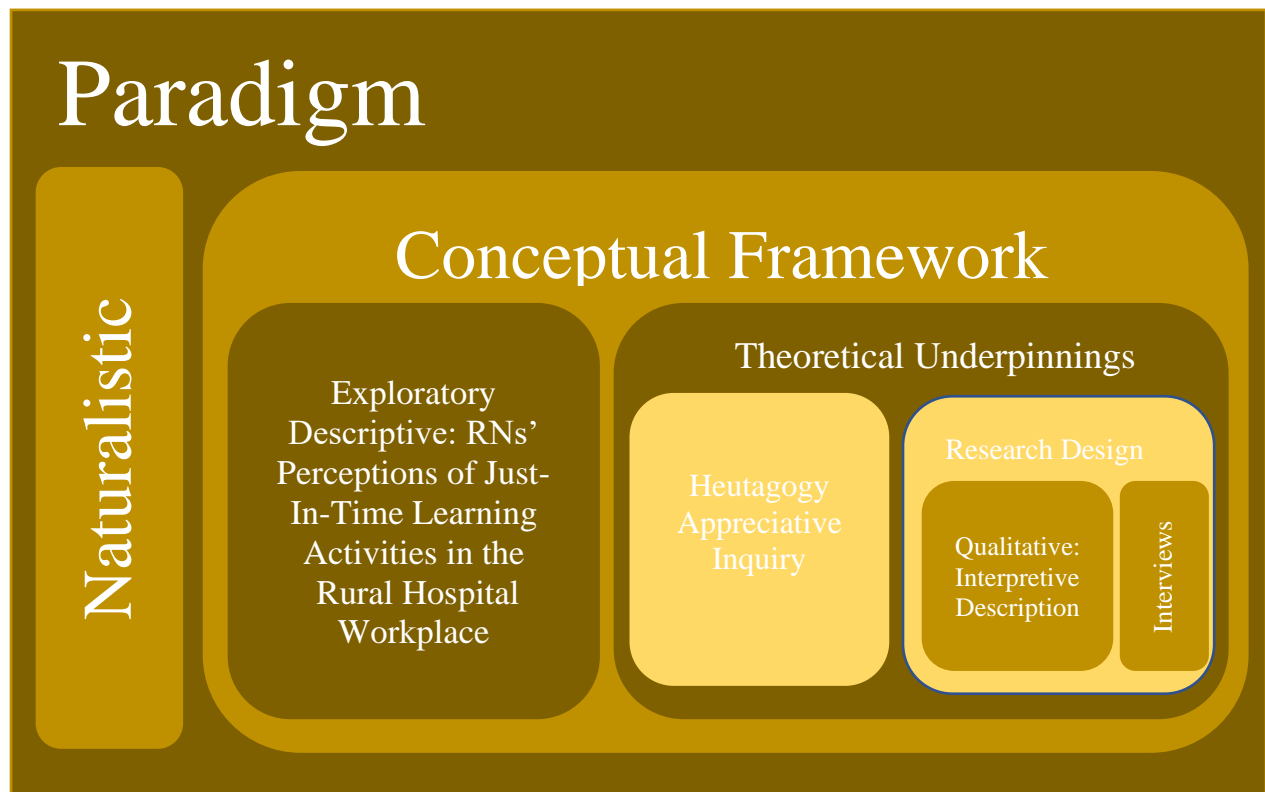
For my study, I used an interpretive description (Thorne, 2008, 2016) research design and a data collection technique of interviewing. Interpretive description enabled me to generate knowledge about rural RNs' perceptions of their just-in-time learning activities using blended educational resources that are of practical use to them. Hence, I explored what practice situations ranging from simple to chaotic (Snowden & Boone, 2007) require rural RNs to engage in just-in-time learning activities, the cognitive decision-making processes they use to determine their just-in-time learning needs and actions, and the blended educational resources needed to support these activities. I elaborate on these situations and cognitive processes in the Informal Learning section of Chapter 2. The technique of interviewing allowed me to get close to, spend time with, and collaborate with the participants, thus supporting me to generate mutually constructed interpretations of their perceptions about the phenomenon. Aligning with this type of data collection process, I inductively and iteratively analyzed the data (Strauss & Corbin, 1998). I also kept a research journal to capture my analytic insights (which I detail in the Analytic Insights section of Chapter 2) and exercises of reflexivity (which I describe in the Credibility Assurances section of Chapter 3).

I know that my substantive assumptions stemming from my rural background, disciplinary heritages of rural nursing and nursing education, and a pivotal lifechanging moment wherein my two daughters survived a horrific motor vehicle collision, have influenced my study. These assumptions are based in heutagogical learning theory (Blaschke & Hase, 2019; Hase & Kenyon, 2007) and appreciative inquiry methodological theory (Cooperrider & Whitney, 2005). Together, they formed the theoretical underpinnings of my study. In addition, I detail the informal learning theories of Eraut (2000) and Watkins and Marsick (2021) in Chapter 2 that have shaped my study; I used the first one to critique the literature, and both in conjunction with heutagogy and appreciative inquiry theories to inform my interpretations during data analysis.

11

Heutagogy Learning Theory

Heutagogy, an extension to andragogy (see Table 2), is a learner-centred education theory created by Hase and Kenyon (2000) as a different approach to formal and informal education (Blaschke & Hase, 2019). While andragogy supports adult individuals to learn content in a linear, self-directed way dependent on past experiences, motivation, and relevance to their work or learning contexts (Knowles et al., 2005), heutagogy promotes learning in a dynamic, non-linear, self-determined manner that can adapt to complex, changing systems (Blaschke & Hase, 2019). According to Blaschke and Hase, andragogy aims to develop a learner's competency (ability to perform routine skills) and single-loop reflection (ability to reflect on what was learned) in a linear fashion, whereas heutagogy focuses on fostering a learner's capability (confidence in their ability to perform skills or actions in new contexts or challenging situations) and double-loop reflection (ability to understand how they learn) in a non-linear, dynamic way.

Table 2

From Andragogy to Heutagogy

Andragogy (Self-directed)		Heutagogy (Self-determined)
Single-loop learning	→	Double-loop learning
Competency development	→	Capability development
Linear design and learning approach	→	Non-linear (dynamic) design and learning approach
Instructor-learner directed	→	Learner directed
Getting students to learn (content)	→	Getting students to understand how they learn (process)

Note. Adapted from "Heutagogy and Lifelong Learning: A Review of Heutagogical Practice and Self-Determined Learning," by L. Blaschke, 2012b, *The International Review of Research in Open and Distributed Learning*, *13*(1), 56-71, p. 61 (https://doi.org/10.19173/irrodl.v13i1.1076). Copyright 2012 by Lisa Marie Blaschke.

Heutagogy was born from complexity theory to support developing practitioners who can readily adapt to change and just-in-time learning in the shifting landscape of 21st Century learning and complex systems (Blaschke & Hase, 2019). It also has roots in the established learning theories of humanism (Maslow, 1943; Rogers, 1969), capability theory (Stephenson, 1992), constructivism (Vygotsky, 1978), connectivism (Siemens, 2004), neuroscience (Blaschke & Brindley, 2011; Mezirow, 1990; Schön, 1983), and transformative learning (Mezirow, 1990).

The underlying assumptions of complexity theory are that people change in response to distressing situations (Hase & Kenyon, 2007) and that systems perform in regular, predictable ways under some conditions and in irregular, unpredictable ways during other conditions (Rosenhead, 1998). The rural hospital workplace resembles one of these complex systems.

At the core of heutagogy are learner agency (Hase & Kenyon, 2000) and humanism (Rogers, 1969). Learners are encouraged and supported to take responsibility for determining and constructing the non-linear pathways for their learning (Blaschke & Hase, 2019) using an active learner-centred approach that entails learning by doing, exploring, and inquiring, to move from the known to the unknown (Vygotsky, 1978). This responsibility develops their self-efficacy, capability, and self-reflection skills (Blaschke & Hase, 2019) thereby, resulting in transformational (Blaschke et al., 2021) or transformative learning (Mezirow, 1990). Transformative learning is the deep, constructive, meaningful learning that supports individuals in consciously shifting their thoughts, feelings, perspectives, and beliefs to alter their way of being in the world and to make meaning of their lives (Mezirow, 1990, 1997). To transform one's thinking first requires developing their self-efficacy.

Self-efficacy is an individual's belief in or perception of their ability to achieve an outcome (Bandura, 1977). When learners are given agency and autonomy, they make

independent choices that reinforce and develop their perception of self-efficacy through trial and error (Blaschke & Hase, 2019). Conversely, those with low perceived self-efficacy can be restricted in their learning because their low self-efficacy influences their level of effort and perseverance when confronted with challenges (Bandura, 1977). Even so, when one's self-efficacy increases, their perceived sense of capability also increases (Blaschke & Hase, 2019).

Capability refers to one's confidence in their ability to take appropriate and effective action to perform a known skill in a new context or to learn a new skill by relying on their own experience or that of others (Stephenson, 1992). Capability differs from competency (the ability to perform routine skills) because it requires learners to use self-reflection to demonstrate competency in new contexts or challenging situations (Hase & Kenyon, 2007).

Self-reflection is characterized by single-loop and double-loop learning (Blaschke & Hase, 2019). Single-loop learning involves a learner reflecting on what has been learned, and double-loop learning requires a learner to use metacognitive skills based in neuroscience to reflect on the process of learning or to reframe their ideas by connecting with others in-person (Blaschke & Brindley, 2011; Mezirow, 1990; Schön, 1983) or across a network (Siemens, 2004) to explore alternative options to what they are learning (Watkins & Marsick, 2021).

Notably, Blaschke and Hase (2019) highlighted that the principles of heutagogy are in a symbiotic relationship with the features of technology (see Figure 2). In this case, technology refers to Web 2.0 technologies (also known as the Web), which include social and digital media that can be used on any form of computer (Blaschke & Brindley, 2015; RNspeak.com, 2022); and hand-held mobile devices such as smartphones, iPads, and laptops (Blaschke & Hase, 2016).

The non-linear design and user-friendly software of Web 2.0 technologies support learners to self-determine their learning resources via the Internet, open educational resources, and a variety of media platforms (i. e. chat rooms, Google Search, YouTube, video, and online

forums) using their choice of computer or mobile device (Blaschke, 2012a; RNspeak.com, 2022). Learners can autonomously and flexibly choose where, how, and what they will learn (Blaschke, 2012a; Blaschke & Hase, 2016; RNspeak.com, 2022) in this constantly evolving and convenient e-learning environment, which supports them in developing their capability.

Figure 2

Web 2.0 Features and Heutagogy
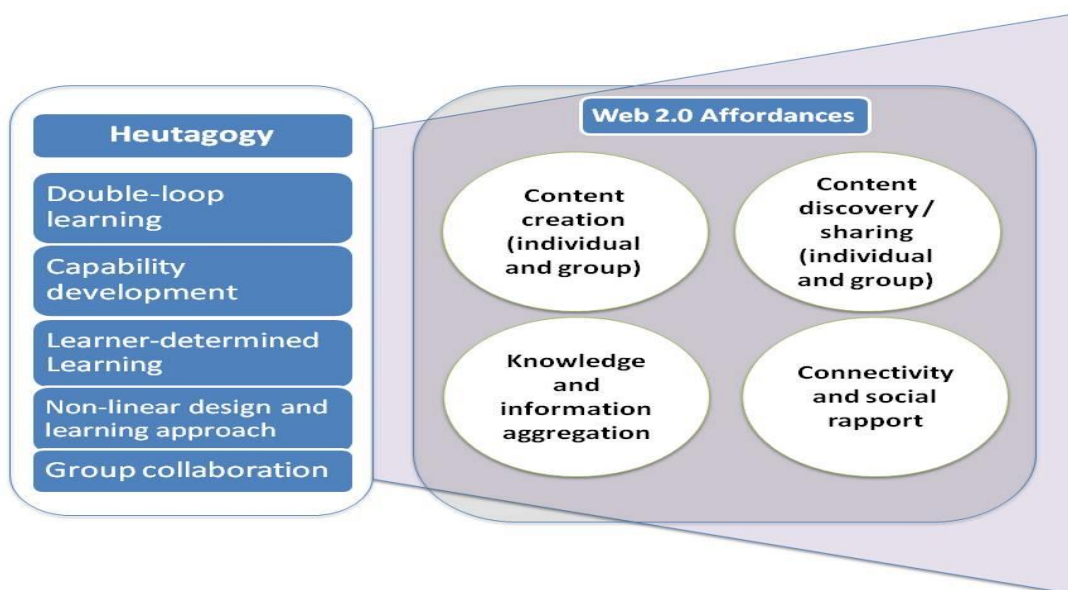
Note. From "Using Web 2.0 to Support the Development of Self-Determined Learning Skills," by L. M. Blaschke, 2012a, in S. Hase and C. Kenyon (Eds.), *Self-determined learning: Heutagogy in action* (1st ed.), p. 4 (https://www.researchgate.net/publication/268684147_E-learning_and_self-determined_learning_skills). Copyright 2012 by Lisa Marie Blaschke.

The Web offers learners a selection of online resources to search for solutions to their questions and problems via whatever computer device works for them (Blaschke, 2012a; Blaschke & Hase, 2016; RNspeak.com, 2022). These convenient tools support developing learners' capability because they can customize information in-the-moment to use for new or challenging contexts, which contributes to their problem-solving skills, lifelong learning, and ability to engage in double-loop learning (Blaschke et al., 2021).

The Web provides learners an environment rich for engaging in double-loop learning

because they can generate and share content collaboratively with others (Blaschke & Brindley, 2015) — again with whatever computer device they have available and using a variety of social networking tools such as Twitter, LinkedIn, Facebook, Instagram, YouTube, TikTok, and online forums and discussion groups (RNspeak.com, 2022). Online resources also support learners to engage in reflective practice as they provide an array of blogging forums such as WordPress, Joomla, and BlogSpot to collect and synthesize content (RNspeak.com, 2022).

Given the convenience, usability, and non-linear nature of current technologies, it is not surprising that RNs in the complex and often chaotic rural hospital workplace rely on the affordances of technology (i. e. Internet searches and resources, media platforms, mobile devices, and desktop computers) to determine what online educational resources to access and how to access them for their just-in-time learning activities. This type of learning requires learner agency (to determine their learning needs and the resources that will best meet these learning needs), self-efficacy (to know if they can achieve what is needed in-the-moment), capability (to determine what they know and still need to know to practice safely), and strong self-reflection skills (to use past practice experiences or reframing to support learning in new contexts) – all fundamental principles of heutagogy theory. Thus, Hase and Kenyon's (2007) heutagogical learning theory was a solid theoretical foundation for interpreting rural RNs' perceptions of how well blended educational resources have supported their just-in-time learning activities. In addition, Cooperrider and Whitney's (2005) assets-based appreciative inquiry theory was a sound methodological foundation for generating my strengths-based research aim and questions.

Appreciative Inquiry Theory

Appreciative inquiry is a research theory, research methodology, and change process based in social constructionism (Cooperrider & Srivastva, 1987) that has been used to explore the experiences of healthcare professionals in a variety of workplaces (Reed et al., 2002;

Trajkovski et al., 2013). Its underlying premise is to actively search out the best practices that exist in a workplace and to build upon the strengths of these practices (Carter, 2006).

Appreciative inquiry theory was first introduced by Cooperrider and Srivastava (1987) to promote positive change in the corporate world. Later, Cooperrider and Whitney (2005) created the 4D cycle of appreciative inquiry, which includes identification of what gives life to the organization (positive central core) and an affirmative topic of inquiry, followed by using the components of discovery, dream, design, and destiny to make positive change to an organization. In 2011, Cooperrider and Godwin changed the 4D cycle to the 4D model of appreciative inquiry (Cooperrider & Godwin, 2012), which has since been adapted to include the previous affirmative topic of inquiry as a fifth component in the cycle (AI Commons, n.d.; Organizing Engagement, 2022). This rendition, located in the Organizing Engagement and AI Commons websites, is the 5D cycle of appreciative inquiry (see Figure 3).

Figure 3

Organizing Engagement (2022) Adapted 5D Cycle of Appreciative Inquiry
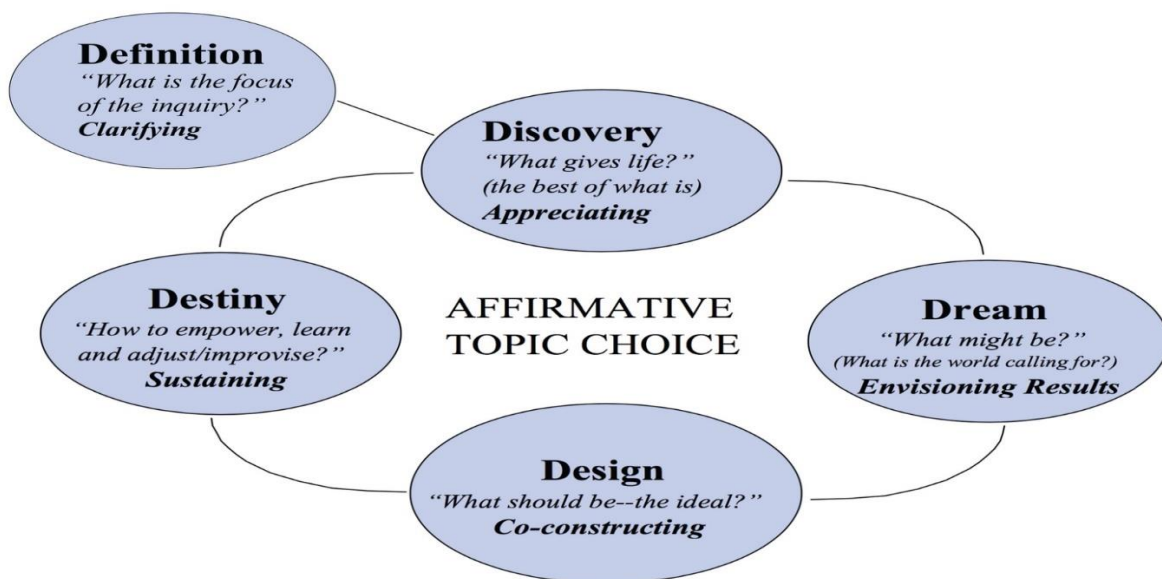
Note. From "Models: Appreciative Inquiry," by Organizing Engagement 2022, *Organizingengagement.org*, para. 10 (https://organizingengagement.org/models/appreciative-inquiry/). Copyright 2005 by David L. Cooperrider and Diana Whitney.

Research Aim and Research Questions

The primary aim of my study was to generate knowledge to inform the creation of recommendations for rural hospital administrators, educators, managers, nurses, and policymakers that can support the just-in-time learning activities of rural RNs using blended educational resources, and in turn, facilitate rural RNs' ability to provide capable, safe patient care. I elaborate on this aim and the significance of the study in Chapter 6, Conclusion. Moreover, the findings begin to address the paucity of existing literature about RNs' just-in-time learning activities using blended educational resources in the rural hospital workplace.

To conduct a qualitative study, Creswell (2007) recommended that the researcher begin their inquiry using a broad, central, open-ended research question, which restates the purpose of the study. For my study, the overarching research question and sub-questions that drove the study were as follows:

- To what extent do RNs in the rural hospital workplace perceive that blended educational resources support their just-in-time learning activities?

  1. In what situations do rural RNs perceive that they require just-in-time learning activities?

  2. What intrinsic cognitive processes do rural RNs perceive they use to engage in just-in-time learning activities?

  3. What blended educational resources (human and tangible) do rural RNs perceive as influencing their decisions about engaging in just-in-time learning activities?

  4. What blended educational resources (human and tangible) do rural RNs perceive would improve their ability to practice capably and safely?

To elucidate what I achieved by using the above research question and subquestions, I now provide definitions for the terms *just-in-time learning activities*, *cognitive intrinsic processes*,

capability, and *safely*. In addition, I describe the aims associated with each of these terms.

The term *just-in-time learning activities* is a construct that refers to the thinking and actions of an individual RN or group of people including an RN when engaging in learning quickly and in-the-moment. An important distinction here is that just-in-time learning activities are a combination of events, rather than a single event. Asking participants a question about these events helped me to reveal the commonalities and differences in their just-in-time learning activities relative to simple, complicated, complex, and chaotic situations (Snowden & Boone, 2007). In Chapter 2, Theories of Informal Learning section, I define each of Snowden and Boone's situations and relate them to the context of the rural hospital workplace by providing an example of each from my own rural RN practice.

The term *intrinsic cognitive processes* is a concept that refers to the decision-making activities that individuals engage in when thinking about learning in-the-moment. Generating understanding about this concept helped me to reveal variations in the decision-making processes used by rural RNs, ranging from experience levels of advanced beginner to expert (Benner, 1982), when engaging in just-in-time learning activities. These processes were influenced by the amount of time available to engage in just-in-time learning, type and degree of learning needed, and environmental factors such as patient acuity levels and staffing ratios. In Chapter 2, Theories of Informal Learning section, I define RN levels of expertise using Benner's (1982) novice to expert framework.

Capability is a concept that refers to one's confidence in their ability to take appropriate and effective action to perform a known skill in a new context or to learn a new skill by relying on their own experience or that of others (Stephenson, 1992). Importantly, capability differs from the concept of competency (the ability to perform routine skills), as it requires using self-reflection (and a combination of tacit and propositional knowledge) to demonstrate competency

19

in new contexts or challenging situations (Hase & Kenyon, 2007). Asking a question of participants that includes the term *capability* (and explaining some of its characteristics) assisted me with exploring variations in the confidence levels of rural RNs, ranging from advanced beginner to expert (Benner, 1982, 2004), when engaging in just-in-time learning activities. It also supported revealing variations in the blended educational resources rural RNs of differing levels of expertise decide to access when engaging in just-in-time learning activities.

The term *safely* is a construct that pertains to RNs practicing capably within the context of the rural hospital workplace. To *safely* practice as a rural generalist RN requires capably maintaining breadth and depth of nursing knowledge and task-based skills; engaging in clinical reasoning and clinical judgment; being creative, innovative, and resourceful; adapting to unknown or unanticipated events; working autonomously and ethically; and fulfilling the duties of other members of the interprofessional team when needed (Smith, 2014). Asking a question of participants that included the term *safely* (and highlighting some of its characteristics) helped me to explore participants' insights into how well blended educational resources had supported (or not) their ability to practice *safely* when engaging in just-in-time learning activities amidst the dimensions of amount of time, degree of learning, patient acuity levels, and level of support. Next, I outline the significance of my study.

Significance of the Study

Rural RNs often, and out of necessity, acquire and maintain their generalist practice expertise using just-in-time learning activities and blended educational resources. Just-in-time learning can be challenging for rural RNs because they work in a complex, diverse, and often chaotic environment of unknowns, stretched resources, and limited blended educational resources (CARRN, 2020; MacLeod, Kulig et al., 2019; Sedgwick & Pijl-Zieber, 2015; Smith & Vandall-Walker, 2017). Rather than focusing on the issues impacting rural RNs' just-in-time

20

learning activities, an appreciative inquiry approach allowed me to aim my study at the extent to which RNs from across the province of Alberta perceive that blended educational resources support their just-in-time learning activities. Understanding this phenomenon may enable me to generate substantial recommendations for rural hospital staff, CNEs, managers, administrators, and policymakers, as well as post-secondary institutions that can support them in creating initiatives to improve the just-in-time learning activities of RNs in the rural hospital workplace. This type of knowledge may aid me in achieving the following outcomes.

RNs who participate in the study could learn new information about their own practices that can aid them in refining their strategies for engaging in just-in-time learning activities in the rural hospital workplace and thus, their ability to practice capably and safely. Moreover, they may offer suggestions for staff about how to effectively engage in just-in-time learning activities to manage a range of situations. In addition, contributing ideas about how to improve the educational supports for rural RNs' just-in-time learning activities based on their own perceptions of what would be useful can empower them, thereby helping to retain them in the rural hospital workplace.

Beyond the RNs who participate in this study, comprehending the cognitive decision-making processes that rural RNs use during their just-in-time learning activities for a range of practice situations will enable me to generate recommendations for CNEs about how to support rural RNs' continuing education and professional development. Furthermore, understanding the blended educational resources that best support rural RNs to engage in just-in-time learning activities will enable me to offer rural hospital managers, administrators, and policymakers with suggestions for how to improve the allocation and sustainability of human and technological continuing education resources in the rural hospital workplace. More broadly, publishing the findings will extend the knowledge generated from this study to a far wider audience of RNs and

21

healthcare practitioners, which may resonate with them, making it useful to their practices.

Overall, the existing research about the just-in-time learning activities of RNs in the rural hospital workplace is sparse. Therefore, my findings will contribute new knowledge to both the field of education and the profession of rural nursing that can support RNs' just-in-time learning activities using blended educational resources in the rural hospital workplace, and in turn, their ability to confidently practice capably and safely. My findings may also be the basis for conducting further research on the topic to determine the effects of the recommendations I generated for rural stakeholders. I further detail the significance of the findings and how they inform the initiatives highlighted above in Chapter 6, Conclusion.

Chapter Summary and Overview of the Study

In this chapter, I introduced the need to explore the just-in-time learning activities of RNs using blended educational resources in the rural hospital workplace. The complexity and diversity of rural nursing practice coupled with its lack of educational supports rendered a need to explore which blended educational resources have been working well to support rural RNs' just-in-time learning activities. The findings of this research offer recommendations for rural stakeholders that can assist them with generating strategies to support rural RNs' just-in-time learning activities. In turn, these strategies can support rural RNs in confidently providing patient care capably and safely.

In Chapter 2, I provide an analysis and critique of the research that has been conducted about rural RNs' just-in-time learning activities over the past seven years. I highlight that blended educational resources can support rural RNs with their just-in-time learning activities but that there is also a paucity of literature about this phenomenon.

In Chapter 3, I provide a detailed description of the methodology and methods I used to conduct this study. I explain why I chose a qualitative interpretive description research design as

my methodology, emphasizing its constructivist origins. I then describe and embed the research design elements within my axiological, ontological, and epistemological beliefs. Finally, I detail the methods I used for data collection and analysis, as well as my methods for attending to rigor.

In Chapters 4 and 5, I highlight the findings of the study as a thematic description titled *It Varies! Blended Educational Support for Rural Registered Nurses' Just-In-Time Learning Activities*. This overarching theme and its six inextricably linked themes *My Role, My Level of Expertise, What is the Situation? Who/What are My Go-To Resources?* and *What are My Learning Actions?* include the narratives of the 13 RNs from across Alberta, Canada who participated in this study.

In Chapter 6, I seat the findings of my study in the existing literature addressing *It Varies! The Context* and *It Varies! The Actions*. I then discuss the strengths and limitations of the study, followed by its implications for both the field of education and the profession of nursing. Next, I provide recommendations for rural stakeholders offered by the RNs who participated in this study, as a seventh theme of *It Varies!* titled *Who/What Could Make It Better,* as well as those generated by me. I then provide suggestions for future research. Finally, I present a conclusion to this study/dissertation.

Chapter 2. Review of the Literature

A critical review of the literature is a fundamental component of conducting research, as it enables the researcher to determine the strength, quality, and consistency of evidence applicable to the proposed research phenomenon (Fulton et al., 2013). In this chapter, I provide a synthesis of the literature about informal learning and workplace learning, as well as an analysis and critique of the literature about the phenomenon of just-in-time learning activities of registered nurses (RNs) using blended educational resources in the rural hospital workplace. For my study, the term *just-in-time learning activities* is a construct subsumed within the broader concepts of *informal learning* and *workplace learning*, the term *rural hospital workplace* is a construct subsumed by the broader concept of *professional workplace*, and the term *blended educational resources* is a construct that encapsulates human, online, and hardcopy educational resources within the rural hospital workplace.

To effectively conduct research about my phenomenon, I locate the literature review within the research methodology I used for the study, Thorne's (2008, 2016) qualitative interpretive description. To do so, I provide a brief description of Thorne's recommendations for locating and timing a literature review within an interpretive description research design. I then describe the strategies I used to search the literature, followed by those I used to sort and analyze it. After that I identify the limitations of my literature review. Next, I synthesize and critique the literature relevant to my phenomenon of study, after which I describe the gaps and limitations in that literature. To close, I provide a chapter summary and overview of Chapter 3.

Locating My Literature Review

Conducting an interpretive description research study requires scaffolding, which includes two critical elements: conducting a literature review and positioning oneself in the study (Thorne, 2016). In this chapter, I address the literature review portion of the scaffold. In Chapter

3, I position myself within the study. According to Thorne (2016), the kind of literature review that best supports an interpretive description research study is one that grounds the study within the existing knowledge, offers critical reflection on the literature that does and does not exist about the phenomenon being studied, and provides an interpretive commentary on the strengths and weaknesses within the overall body of knowledge about the phenomenon. It is conducted prior to beginning the study and is used to establish what those in the field wish to know, where that knowledge may reside, and why it matters. To generate that kind of literature review, the researcher must document and explain what is known about the phenomenon to be studied and the nature of the inquiries used to create that knowledge (Thorne, 2016). To begin my literature review, I set an aim.

Aim of the Literature Review

My aim in undertaking the literature review was to learn how blended educational resources have informed and impacted rural RNs' just-in-time learning activities. Following Thorne's (2016) outline, my objectives were to gain an understanding of the relevant literature, identify gaps in the literature, and provide a clear scope for my research. The question that drove my review was: How do blended educational resources inform and impact the just-in-time learning activities of rural RNs? As follows are the methods I used to conduct the review.

Methods to Conduct the Literature Review

To critically examine the literature relative to my search question, I conducted a scoping review of the literature using Arksey and O'Malley's (2003) methodological framework. My process consisted of using search strategies to find pertinent information about the phenomenon, as well as quality appraisal and analysis techniques to sort and analyze that literature.

Search Strategies

The literature search was conducted in three separate activities, which I illuminate as the

overarching themes in this review: Theories of Informal Learning, Workplace Learning, and Blended Educational Resources Can Support Rural RNs' Just-In-Time Learning Activities. Prior to beginning the search, I connected with librarians from Athabasca University (AU) to learn how to effectively conduct online literature searches. I then followed their search advice.

I began the search by accessing two of AU's online aggregator databases (ProQuest and Ebscohost) and Google Scholar using the terms 'just-in-time learning', 'informal learning', 'in-the-moment learning', 'rural hospital', 'nurses', 'blended resources', 'professional development', 'continuing professional education', and Boolean phrases. I also searched theses repositories to learn if others had conducted research related to these terms.

In the early stages of the search, I looked for studies about just-in-time learning of RNs in the rural hospital, which produced few results. However, from the studies I found, I learned that just-in-time learning is a type of informal learning that spans across a variety of professions. This finding led me to pursue the literature about informal learning of professional disciplines. As I read that literature, I learned that informal learning of professional disciplines is an integral part of workplace learning, so I searched the literature about workplace learning relevant to professional disciplines. Then, I broadened my search for studies about just-in-time learning of rural RNs using blended educational resources by removing the word "rural" and adding the term "healthcare". This action supported me in locating articles about just-in-time educational interventions and learning activities across professions in the hospital workplace. I then searched theses repositories again, and the Australian *Online Journal of Rural and Remote Health,* to learn if others had conducted research about these phenomena within the last six years. From the literature I found, I perused the reference lists to locate more resources. During the search process I used inclusion criteria to narrow or broaden the search.

Inclusion Criteria

For this review, I employed the following inclusion criteria: (a) specific to or including rural RNs, (b) key researchers or stakeholders cited in articles globally, (c) key researchers or stakeholders who compared experiences across or in different health disciplines, (d) peer-reviewed articles, (e) language of publication was English, (f) primary or original publications, (g) literature having implications for theory and practice, (h) empirical studies, (i) theses or dissertations, (j) books and reports, (k) web pages, and (l) grey literature such as government and nursing association reports. Due to advancing technology and the rapidly changing landscape of online educational resources, I narrowed the literature specific to rural RNs' just-in-time learning activities using blended educational resources to only include documents dated 2016-2023. Below I highlight how I chose articles for each of my three overarching themes.

I accessed several studies and books about informal learning; however, only seminal authors whose work pertains to the professional disciplines and includes nursing are highlighted in this review. I also found several studies and a few books about workplace learning. I included those that spanned disciplines and included nursing. I then focused on literature that pertains to RNs in the Canadian rural hospital workplace and the Alberta rural hospital workplace (the province in which I conducted the study). Relative to the phenomenon of just-in-time learning activities of RNs using blended educational resources in the rural hospital workplace, I had retrieved and sorted 162 studies, 12 literature reviews, 1 master's thesis, 1 doctoral dissertation, and 12 discussion papers (see Figure 4) prior to initially appraising and analyzing articles.

Quality Appraisal and Data Analysis

I used four tools to sort and analyze the literature pertaining to the theme Blended Educational Resources Can Support Rural RNs' Just-In-Time Learning Activities. As I located articles online, I read each title searching for its relevance and if there were duplicates.

Figure 4

Selection Process for Included Literature

```
                        ┌─────────────────────┐
                        │  Records Identified  │
                        │       N=188          │
                        └─────────────────────┘
                                  ⇓
                        ┌─────────────────────┐
                        │  Duplicates Removed  │
                        │       N=10           │
                        └─────────────────────┘
                                  ⇓
                        ┌─────────────────────┐        ┌─────────────────────┐
                        │   Titles Screened    │  ⇒     │  Records Excluded    │
                        │       N=178          │        │       N=25           │
                        └─────────────────────┘        └─────────────────────┘
                                  ⇓
                        ┌─────────────────────┐        ┌─────────────────────┐
                        │  Abstracts Screened  │  ⇒     │  Records Excluded    │
                        │       N=153          │        │       N=100          │
                        └─────────────────────┘        └─────────────────────┘
                                  ⇓
┌─────────────────────┐ ┌─────────────────────┐        ┌─────────────────────┐
│  Additional Records │ │     Full Texts       │  ⇒     │  Records Excluded    │
│       N=9       ⇒   │ │       N=62           │        │       N=44           │
└─────────────────────┘ └─────────────────────┘        └─────────────────────┘
                                  ⇓
┌─────────────────────┐ ┌─────────────────────┐        ┌─────────────────────┐
│  Additional Records │ │  Quality Appraisal   │  ⇒     │  Records Excluded    │
│       N=5       ⇒   │ │       N=22           │        │       N=4            │
└─────────────────────┘ └─────────────────────┘        └─────────────────────┘
                                  ⇓
                        ┌─────────────────────┐
                        │    Final Review      │
                        │       N=18           │
                        └─────────────────────┘
```
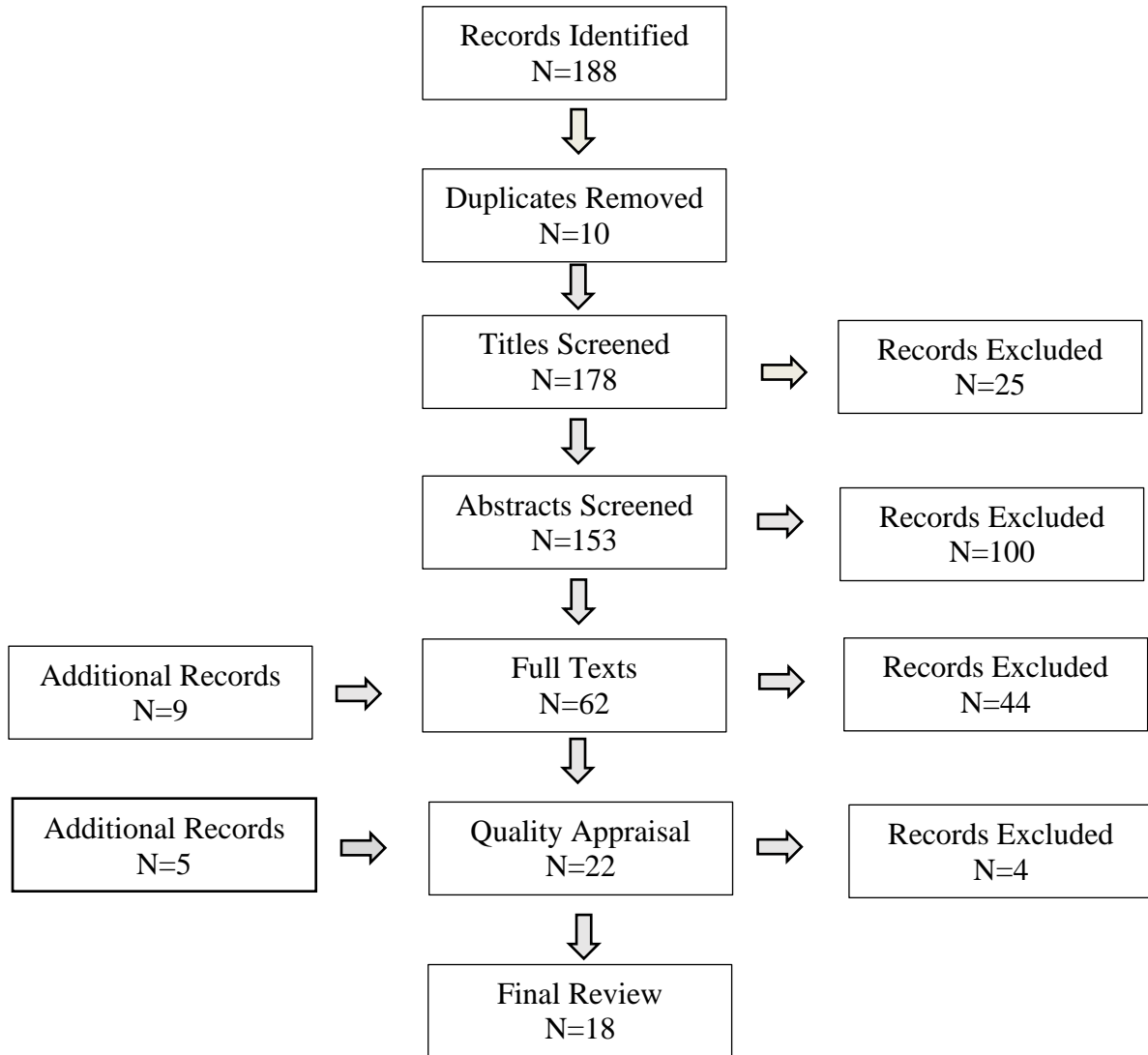
This exercise resulted in the exclusion of 35 articles. Next, I read each abstract looking for

relevance and excluded 100 articles. I then found four additional articles in the *Online Journal of*

Rural and Remote Health. At this point, I began storing and sorting articles on my computer

using my Zotero reference manager. Next, I read each saved article in its entirety, which resulted

in excluding 44 articles. Initially, the final number of articles pertaining to rural RNs' just-in-

time learning using blended educational resources was 17. When writing the Discussion chapter,

I accessed another five articles using the artificial intelligence feature of Microsoft (MS) Bing; one of these articles was relevant and retrieved for a total of 18 articles. To sort and appraise the 18 articles, I used Cooke et al.'s (2012) sample, phenomenon of interest, design, evaluation, research type (SPIDER) tool (see Table 3) and a MS Word document (see Appendix B).

Table 3

Adapted SPIDER Tool (Cooke et al., 2012)

S (Sample)	RNs in rural hospital workplaces Practitioners including RNs across disciplines
PI (Phenomenon of Interest)	Just-in-time learning of rural RNs using blended resources Just-in-time learning of practitioners and RNs across disciplines using blended resources
D (Design)	Discussion papers (6) Quantitative (3) — surveys; exploratory, descriptive, cross-sectional survey; case study using regression analysis Qualitative (8) — semi-structured interviews; appreciative inquiry using observation; grounded theory using interviews; appreciative inquiry using semi-structured interviewing; interviews; exploratory using interviews Mixed methods (1) — case study using interviews and a survey
E (Evaluation)	What was being learned? How was it being learned? How did participants demonstrate self-efficacy, capability, and self-reflection? Facilitators and barriers to just-in-time learning activities
R (Research Type)	Qualitative, quantitative, mixed methods, and discussion papers

Note. Adapted from "Beyond PICO: The SPIDER tool for qualitative evidence synthesis," by A. Cooke, D. M. Smith, and A. Booth, 2012, *Qualitative Health Research, 22*(1), 1435-1443, p. 1438 (https://www.researchgate.net/publication/230565751_Beyond_PICO_the_SPIDER_tool_for_qualitative_evidence_synthesis). Copyright 2012 by Alison Cooke, Debbie M. Smith, and Andrew Booth.

To analyze the articles and ask questions of the articles, I used Eraut's (2004a) research questions "what is being learned?" and "how is it being learned?" stemming from his studies about formal and informal learning in the professional workplace. I also carefully perused each article searching for Hase and Kenyon's (2007) heutagogical principles of self-efficacy, capability, and self-reflection. In addition, I searched each article for facilitators and barriers to participants or respondents engaging in just-in-time learning activities. In the next section, I identify the limitations of my literature review.

Limitations of the Literature Review

Although I tried to be as thorough as possible in identifying the literature relevant to my phenomenon of study by using an extensive list of keywords in my search strategy, it is possible that some studies were missed. In addition, the literature about rural RNs' just-in-time learning activities using blended educational resources is limited to literature published between 2016-2023. A further limitation is the lack of studies conducted about the phenomenon. As follows are the results of the literature review.

Results of the Literature Review

My literature review consists of three overarching themes – Theories of Informal Learning, Workplace Learning, and Blended Educational Resources Can Support Rural RNs' Just-In-Time Learning Activities – and a description of the gaps and limitations in the literature. As previously indicated, just-in-time learning stems from informal learning. Therefore, I begin this review by addressing the seminal work of prominent theorists in the field of informal learning. I then address workplace learning, focusing on continuing professional education and human resource development. Next, I distill the literature down from RNs who have been practicing in the Canadian rural hospital workplace to those who have worked in the Alberta rural hospital workplace, after which I critique the 2016-2023 literature about the just-in-time

learning activities of RNs using blended educational resources in the rural hospital workplace. Finally, I outline gaps and limitations in that literature, highlighting the need for my study.

Theories of Informal Learning

In this section, I focus on the seminal work of Michael Eraut (United Kingdom) and Victoria J. Marsick and Karen E. Watkins (United States), as their work — along with the principles of heutagogy discussed in Chapter 1 — supported me in exploring and interpreting rural RNs' perceptions about their just-in-time learning activities. I begin with the work of Eraut.

Eraut

Eraut spent over 40 years using qualitative methods to study how professionals in nursing, accounting, and engineering learn in the professional workplace (Jantzen, 2012). He posited that informal learning contrasts with formal learning by recognizing the social significance of learning from other people and acknowledging individual agency over socialization (Eraut, 2004a). He deemed that informal learning in the professional workplace involves a combination of learning from personal experience, other people, or a combination of both. Furthermore, Eraut contended that informal learning is characterized by implicit, unintended, opportunistic, and unstructured learning in the absence of a teacher, and often takes place in the spaces surrounding formal activities. To describe the types of informal activities that learners engage in, Eraut (2000) created a typology of informal learning as outlined below.

Typology of Informal Learning. Eraut (2000) believed that informal learning consists of modes of learning that range from implicit to deliberative (with reactive as a midpoint). He posited that these modes are dependent upon an individual's level of intention to learn and the amount of time they have available to focus on learning.

Implicit or Tacit Learning. Eraut's (2004a) work about implicit or tacit learning stems from the work of Reber (1993) and Kolb (1984). According to Reber, implicit or tacit learning is

the process of acquiring knowledge independent of conscious attempts to learn and occurs in the absence of explicit or propositional knowledge about what was learned. Eraut (2000) determined that informal learning is characterized by implicit or tacit linkage of memories to the current experience, which unconsciously affect the experience by means of episodic memory. Kolb theorized that episodic memory can be used to construct generalized knowledge structures in semantic memory. According to Eraut (2004a), experiential learning involves converting tacit knowledge of experiences located in episodic memory to explicit or propositional knowledge using self-reflection. However, he also posited that an opposing pathway to experiential learning is routinization, which involves converting explicit procedural knowledge to tacit knowledge through repetition. In this latter pathway, individuals no longer need to think about how they are doing something because they have done it so many times before (Eraut, 2000).

In the rural hospital workplace, advancing technologies (LaRiviere, 2019; Yoderwise, 2020), professionalization of nursing practice (LaRiviere, 2019; Nelson & Purkis, 2004), and rationing of educational supports (LaRiviere, 2019) have created massive changes in the infrastructure supporting nursing practice. These changes have disrupted the routinization of RNs' day-to-day practices, shifting many situations that used to be simple to ones that are now complicated, complex, or chaotic (I describe the three latter situations in the section of this chapter about [Reactive Learning](#)). A simple situation is characterized by stability, repeating patterns, and consistent events, wherein there are known knowns — clear cause and effect relationships that are easily discernible by almost everyone because they include right answers and decisions based on evidence (Snowden & Boone, 2007). Disruption to this type of context has heightened the need for rural RNs to engage in reactive learning and reduced their ability to participate in deliberative learning.

Deliberative Learning. When a learner reviews past actions, communications, events, or

experiences; systematically reflects on these factors; and then engages in decision-making, problem-solving, and goal-setting activities (including setting aside time) to acquire new knowledge; they are engaging in deliberative learning (Eraut, 2004b).

Previously, most rural RNs were able to use deliberative learning to obtain and maintain their practice expertise because they were provided long orientation periods, frequent on-site workshops, mentoring by seasoned RNs, and in-house CNEs to support them in their learning. Today, these learning supports are seldom readily available. Rather, rural RNs are expected to participate in deliberative learning using self-reflection to determine their learning needs and the blended educational resources required to meet these needs (LaRiviere, 2019; Nelson & Purkis, 2004). Furthermore, it is not unusual for the in-person component of these blended educational resources to be provided off-site, which has made it difficult for some RNs to attend education seminars (Smith & Vandall-Walker, 2017). I elaborate on these points in the Workplace Learning section of this chapter. Moreover, the complex and often chaotic nature of the rural hospital workplace requires RNs to often depend on reactive learning to support their generalist nursing practices.

***Reactive or Opportunistic Learning*.** While intentional, reactive learning consists of very brief near-spontaneous reflection on past episodes, communications, events, or experiences (Eraut, 2004a). It occurs in the middle of an action when there is little time to think. Reactive learning can include incidental noting of facts, opinions, impressions, or ideas with a recognition of learning (Eraut, 2004a). It supports rural RNs in acting in-the-moment during complicated, complex, or chaotic situations. I now define these situations and provide a personal example of each from over 37 years of working as an RN in the rural hospital workplace.

To define situations ranging from complicated to chaotic, I draw upon Snowden and Boone's (2007) cynefin framework (see Figure 5) that was created to assist leaders from a

variety of disciplines to view situations in new ways, assimilate complex concepts, and address real-world problems and opportunities within the context of their workplaces. The term cynefin is a Welsh word, pronounced ku-*nev*-in, "…that signifies the multiple factors in our environment and our experience, which influence us in ways we can never understand" (Snowden & Boone, 2007, p. 2). Later in this chapter I elaborate on Snowden and Boone's cynefin framework when I address Watkins and Marsick's (2021) work about informal and incidental learning.

Figure 5

Snowden and Boone's (2007) Cynefin Framework

Note. From "A Leader's Framework for Decision Making," by D. J. Snowden and M. J. Boone, 2007, *Harvard Business Review*, *85*(11), p. 4 (https://www.systemswisdom.com/sites/default/files/Snowden-and-Boone-A-Leader's-Framework-for-Decision-Making_0.pdf). Copyright by David J. Snowden and Mary E. Boone.

According to Snowden and Boone (2007), a complicated situation is one wherein expert diagnosis is required and there are several known unknowns — cause-and-effect relationships are not immediately apparent to everyone and there is more than one possible right answer. In the rural hospital workplace, complicated situations typically align with emergent situations. In these situations, RNs need to immediately intervene to prevent patient deterioration (Kohtz et al., 2017). One emergent situation I recollect was when I worked with a team of physicians, nurses,

and allied healthcare personnel to provide lifesaving care to a patient experiencing trauma from a motor vehicle collision. I needed to assist with resuscitating that patient while simultaneously collaborating with the team about other interventions required to provide safe and effective care. In this case, expert diagnosis was necessary to determine the extent of the patient's injuries and explicit cause-and-effect of the injuries were not obvious because of our lack of diagnostic tools. These factors created several known unknowns surrounding the evolving treatments.

Complex situations require RNs to engage in the complicated cognitive work of organizing, prioritizing, and making decisions to provide safe patient care (Ebright, 2010). In a complex situation, there are many unknown unknowns because there are no right answers, and several competing ideas requiring creative and innovative approaches to solve problems (Snowden & Boone, 2007). A complex nursing situation that I experienced when in charge of the entire rural hospital workplace required me to make multiple simultaneous decisions about a variety of factors that included managing staffing shortages, reviewing and processing physicians' orders, providing care for a mix of 12 medical-surgical and palliative patients, and mentoring less experienced staff. In this situation, there were many unknown unknowns as there were no particularly right answers concerning staffing, there was no way of knowing how the shift would unfold due to the lack of human resources and potential patient changes, and there were many competing ideas about how I should manage the various responsibilities.

A chaotic situation is disorganized and lacking order (Merriam-Webster, 2022). In chaotic situations there is high turbulence, high tension, no time to think, and an array of unknowns — no clear cause-and-effect answers (Snowden & Boone, 2007). In the rural hospital workplace, a chaotic situation is typically considered a crisis that can include a variety of simple, complicated, and complex situations without the resources to support managing these situations. I encountered a chaotic situation when working a night shift with one other RN and two licensed

35

practical nurses (LPNs). The beds in the rural hospital were full of 36 patients of varying medical diagnoses. All was well until the new RN working the ED asked me for help in the complex situation of providing care for three emergent patients experiencing life-threatening trauma-related injuries sustained from a motor vehicle collision. At the same time a maternity patient entered the hospital imminently ready to deliver a baby, thereby requiring me to provide one-to-one nursing care for them, whilst also delegating one LPN to call the physician and get prepared to care for the pending newborn, and the other, to call in extra help and attend to the patients in the acute care ward. At that point, the situation became chaotic because there was high turbulence, high tension, little time to think, and an array of unknowns related to the complex unfolding situations. Moreover, there were no clear answers to our staffing situation. This situation could easily have become what Snowden and Boone refer to as [disorder](#) if I had been unsure as to which of the four situations predominated. Fortunately, my level of expertise enabled me to make quick and effective decisions.

The preceding examples are merely a smattering of the many complicated, complex, or chaotic situations that can occur in the rural hospital workplace during a shift. However, typical of all these situations is that they require RNs to engage in reactive learning. Yet according to Eraut (2000), the effectiveness of one's learning (no matter the situation) differs significantly from the novice to expert practitioner. What might be manageable to an expert practitioner may be completely overwhelming to someone with less experience (Eraut, 2000). To distinguish among how professionals of varying expertise think and learn in practice, Eraut generated a typology of modes of cognition.

Typology of Modes of Cognition. Eraut's (2000) modes of cognition include analytic, intuitive, and deliberative. Each is influenced by the evidence available, the complexity of the situation, the practitioner's capability and disposition, as well as the contextual variables of the

time available for them to think and the crowdedness of the situation impacting their thinking. What might be classified as rapid or intuitive cognition in one situation can easily shift to deliberative or analytic cognition under less stringent time constraints or in a simpler situation.

Analytic Mode of Cognition. When using analytic cognition, the practitioner uses their tacit knowledge to critically interpret the usefulness of empirical evidence and theory-based arguments to substantiate their use in various situations (Eraut, 2000). In the rural hospital workplace, rural RNs typically us their analytic cognition when interpreting online resources such as policies and protocols relative to a physician's orders.

Intuitive Mode of Cognition. When using their intuitive mode of cognition, the practitioner relies on their prior experience in using tacit knowledge, rather than theory or research (Eraut, 2000). It requires having considerable experience of similar situations. Aspects of this model are found in Dreyfus and Dreyfus' (1986) skill acquisition model, which depicts the progression of novice to expert through bringing together situational understanding, standardized routine procedures, and intuitive decision-making. The model posits that when individuals acquire and develop skills, they pass through five levels of proficiency: novice, advanced beginner, competent, proficient, and expert. These levels reflect one's movement from reliance on abstract principles to that of past experiences and from perceiving a situation in its minute parts to understanding it as a complete whole with relevant bits. It was from this model that nursing theorist Patricia Benner (1982), developed the nursing model from novice to expert.

A novice nurse is typically a student nurse who has "…no experience with the situation in which they are expected to perform tasks" (Benner, 1982, p. 403) and requires clear parameters and guidelines for providing care (Benner, 1984, 2004). An advanced beginner RN is typically a new graduate who can "demonstrate a marginally acceptable performance" (Benner, 1982, p. 403). This new graduate experiences the weight of being legally and professionally

responsible for patients, relies on textbook accounts of how to manage patient care, and may

have difficulty recognizing subtle variations in patient symptoms and changes (Benner, 1984,

2004). A competent RN begins to see their actions as long-range plans (Benner, 1982).

Developing their skillset and grasp of the clinical environment is incremental and dependent on

experiential learning and how varied and complex their patient situations have been (Benner,

1984, 2004). A proficient RN can envision a situation as a whole rather than in its singular parts

because they have learned to situate themselves appropriately in a variety of different patient

care contexts (Benner, 1984, 2004). Finally, an expert RN uses their enormous background

experience and intuition to zero in on problems (Benner, 1982). They are response-based and use

their practical wisdom to intuitively provide care while being attuned to the complexity of the

situation (Benner, 1984, 2004). They can readily and adaptably fuse their thoughts, feelings, and

actions as needed. In the Workplace Learning section of this chapter, I relate Benner's model to

the skills of rural RNs.

Deliberative Mode of Cognition. Practitioners typically use their deliberative mode of

cognition when they are planning, evaluating, or problem-solving patient care, or when reflecting

on an experience (Eraut, 2000). It can be used individually or collaboratively in groups and

requires the practitioner to have access to evidence, some relevant experience, and a willingness

to reflect and consult with others. Deliberative cognition serves two purposes in practice: to

make sense of and/or evaluate one's experience (reflective deliberation) and to use decision-

making and resolution of contentious issues to decide on a future course of action (Eraut, 2000).

Rural RNs typically use deliberative cognition to create or revise patient treatment plans or to

debrief complicated to chaotic situations. They engage in these activities both independently and

in conjunction with a healthcare team.

For my study, Eraut's (2000) typologies of informal learning and cognition provided me

with robust concepts for exploring and interpreting the decision-making processes that rural RNs in this study (whose experience ranged from advanced beginner to expert) utilize when engaging in just-in-time learning activities using blended educational resources. I now introduce the work of Marsick and Watkins to expand upon the process of informal learning.

Marsick and Watkins

Marsick and Watkins (1990) generated a theory of informal and incidental learning and a subsequent (2006) model of informal and incidental learning that stems from Dewey's (1938) theory of experiential learning, Lewin's (1951) field theory, Argyris and Schön's (1974) action science, and Mezirow's (1990) theory of transformative learning (Marsick et al., 2006). Recently, Watkins and Marsick (2021) adapted their model (see Figure 6), using Snowden and Boone's (2007) cynefin framework (see Figure 5), to underpin how individuals in the professional workplace managed the complexity of the COVID-19 pandemic.

Figure 6

Watkins and Marsick's (2021) Adapted Model of Informal and Incidental Learning
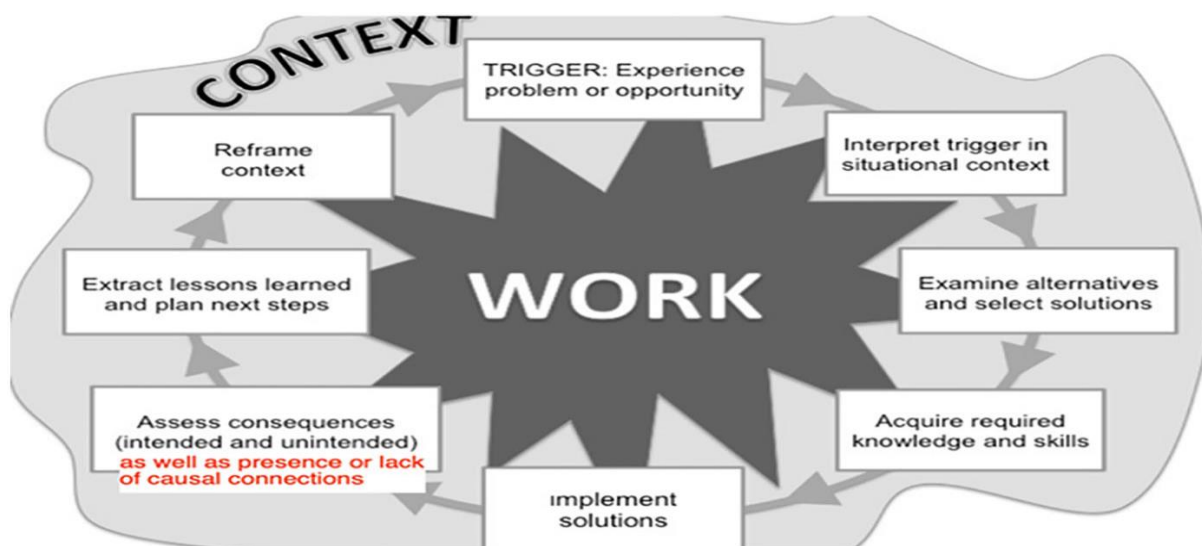
Note. From "Informal and Incidental Learning in the Time of COVID-19," by K. E. Watkins and V. J. Marsick, 2021, *Advances in Developing Human Resources, 23*(1), p. 91 (https://doi.org/10.1177/1523422320973656). Copyright 2015 by Karen E. Watkins and Victoria J. Marsick.

In Watkins and Marsick's (2021) adaptation of Snowden and Boone's (2007) cynefin framework (see Figure 7), individuals make decisions and choose solutions relative to the obvious (simple), complicated, complex, or chaotic situations they encounter. Watkins and Marsick posit that learning in complex or chaotic situations requires the learner to experiment, take calculated risks, be flexible and adaptable, and willing to respond to the unanticipated elements in the workplace; all skills typically required of rural generalist RNs.

Figure 7

Watkins and Marsick's (2021) Adapted Cynefin Framework
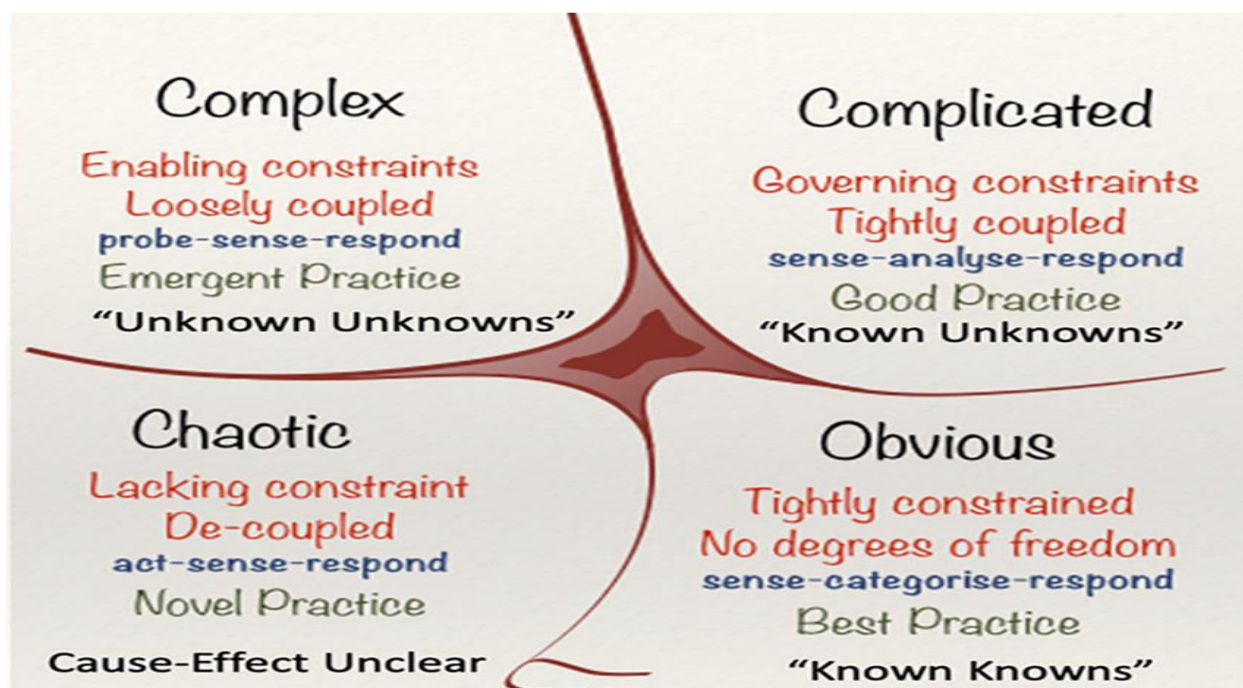
Note. From "Informal and Incidental Learning in the Time of COVID-19," by K. E. Watkins and V. J. Marsick, 2021, *Advances in Developing Human Resources, 23*(1), p. 91 (https://doi.org/10.1177/1523422320973656). Copyright 2007 by David J. Snowden and Mary E. Boone.

To Watkins and Marsick (2021), learning begins with a 'trigger' or catalyst, which is often a gap between what one knows and can do, and what one needs to be able to do. They contend that individuals enter a situation and frame what it means to them from past experiences. This framing then influences the mental models they construct of the experience as they scan the

40

external environment and their internal meaning-making to interpret the situation. However, if learners cling strongly to this framing, they may be blind to other options. Mezirow (1990) contended that this type of single-loop reflection can cause errors because people do things the way they have always done them without recognizing mistakes or searching for other options. In situations that are complex or chaotic, Watkins and Marsick (2021) suggest that individuals can re-frame their thinking by opening their mind to alternatives, exploring other options, consulting those more experienced, looking at good practices, and experimenting with different ways of doing things. They suggest that reframing also requires simultaneously critically self-reflecting about what is happening (Mezirow, 1990). Argyris and Schön (1974) coined this type of reframing and reflection 'double-loop learning'.

For my study, Watkins and Marsick's (2021) adapted model of informal and incidental learning, along with Eraut's (2000) typologies of learning and cognition, provided me with a solid foundation for interpreting RNs' perceptions of engaging in just-in-time learning activities using blended educational resources. Together, they supported me in understanding rural RNs' workplace learning - the decision-making processes they engaged in for a variety of just-in-time learning situations ranging from simple (obvious) to chaotic in the rural hospital workplace.

Workplace Learning

The concept of workplace learning transcends the theoretical approaches of multiple disciplines including, but not limited to, accounting, engineering, nursing (Bierema & Eraut, 2004; Fenwick, 2002), economics, education, psychology, and sociology (Fenwick, 2002). Common to all disciplines are the entwining processes of work and learning in relation to the context in which they are occurring (Streumer & Kho, 2006). In their seminal work, Streumer and Kho highlighted five characteristics of workplace learning that transect all fields or professions: the context in which learning occurs is significant, learning occurs at individual and

organizational levels, degree of self-direction plays a role, learning occurs in different forms (formally, informally, and incidentally), and fostering individuals' ability to learn is more important than coaxing them to develop skills. Bierema and Eraut described the professional workplace as a rich context for formal and informal learning that is influenced by the overlapping professional development perspectives of continuing professional education and human resource development.

Continuing professional education has been referred to as professional development, staff development, continuing education, or continuing professional development (Fahlman, 2012). In nursing, it has been associated with continuing competence, re-licensure, and formal and informal learning (Eraut, 2000; Jantzen, 2012; LaRiviere, 2019; Nelson & Purkis, 2004). Its focus is on the development of an individual's specialist knowledge, expertise, and accountability beyond the initial education required to enter the profession (Bierema & Eraut, 2004; LaRiviere, 2019). Human resource development is focused on the organization as a whole and uses education models to engineer changes in individual, team, work processes, and organizational system performance (Bierema & Eraut, 2004; Swanson & Holton III, 2009).

Although continuing professional development and human resource development have beneficially shaped professional workplace learning, Bierema and Eraut (2004) argued that both have not attended to the complexities of learning in the workplace. Similarly, Kittel et al. (2021) reported that workplaces across a variety of disciplines have not provided adequate initiatives to support informal workplace learning. Rather, individuals have needed to depend on their own self-efficacy and a mastery approach to achieve learning goals. Moreover, 21st Century challenges of globalized capitalism, advancing technologies, and a knowledge-driven economy have contributed to the complexity of the current workplace (Watkins & Marsick, 2021). Recently, the COVID-19 global pandemic has catapulted some workplaces into chaos (Watkins

& Marsick, 2021). It is within this type of complex and often chaotic workplace that Canadian rural RNs must frequently engage in just-in-time learning activities using blended educational resources to obtain and maintain their generalist practice expertise.

The Canadian Rural Hospital Workplace

Over the past 30 years the infrastructure of the Canadian rural hospital workplace has changed significantly. The proliferation of technology has steadily contributed to advancing and evolving medical treatments, specialty care (Yoderwise, 2020), and available information (Kosteniuk et al., 2019). While access to evidence-based information has improved for Canadian rural RNs, rationing of fiscal and human resources have radically changed the infrastructure of their continuing professional education and human resource development resources, resulting in a lack of on-site educational supports (LaRiviere, 2019). As discussed in Chapter 1, several formal learning supports that were previously provided on-site are now seldom available in this modality. In contrast, continuing professional education is currently provided in a blended format that includes online theory components and in-person (on- or off-site) practical components (AHS, 2023a). While this new format has provided rural RNs with increased opportunities to pursue continuing professional education (Kosteniuk et al., 2019), numerous access challenges continue to exist, which I expand upon below.

One of the greatest challenges from a human resource development perspective is that most CNEs in Alberta rural hospitals have been providing educational supports in two or three facilities, thereby reducing their availability at the local level (Smith & Vandall-Walker, 2017). Conditions have been similar in British Columbia and for this reason, the Association of Registered Nurses of British Columbia recommended that nurse educators in rural hospitals be hired into full-time positions (Nurses and Nurse Practitioners of British Columbia [NNPBC], 2018), a strategy previously recommended for Alberta's rural RNs by researchers Sedgwick and

Pijl-Zieber (2015) and Smith and Vandall-Walker (2017).

In both Alberta (Sedgwick & Pijl-Zieber, 2015; Smith & Vandall-Walker, 2017) and British Columbia (NNPBC, 2018), RNs in rural facilities have often needed to travel to attend continuing professional education activities, a factor that has been impacted by their geographic isolation, distance to activities, travel time, limited transportation options, and personal costs. Furthermore, they have encountered challenges to maintaining their competence due to lack of financial supports, inflexible work schedules, lack of administrative support, inadequate staffing to cover absences, and little time to attend continuing professional education activities (MacKinnon, 2010; Smith & Vandall-Walker, 2017). To address these issues in British Columbia, the Ministry of Health in that province invited the Association of Registered Nurses of British Columbia to act as a key stakeholder for making recommendations to improve patient-centred care in rural areas (NNPBC, 2018). One of the main messages among these recommendations was that the generalist practices of rural RNs are not like those of urban RNs because rural RNs are required to provide care to a range of diverse clients of varying diagnoses across the lifespan. They deemed that this type of generalist practice necessitates enhanced support for continuing professional development to enable these RNs to obtain and maintain their generalist expertise. Nonetheless, self-regulation continues to impact how rural RNs from across Canada engage in continuing professional development, as elaborated on below.

During the health reform of the early 2000s, the Canadian Nurses Association (CNA) adopted a competency framework for RNs (LaRiviere, 2019; Nelson & Purkis, 2004) wherein the nursing profession became self-regulated (CNA, 2015). Within this framework, provincial and territorial nursing regulatory bodies (by statute) were given "the power to regulate themselves and to ensure the profession [would remain] accountable to the public and to governments" (CNA, 2015, p. 7). Notably, Canadian RNs are not required to be members of

CNA nor are they legislated by CNA policy. They must, however, be registered under the regulatory association in the province or territory in which they work. These provincial/territory associations set the practice standards in each jurisdiction. In Alberta, the nursing regulatory body is the College of Registered Nurses of Alberta (CRNA). It follows CNA policy through mandating that each RN in the province develops and maintains practice expertise through (1) independently acquiring, maintaining, and enhancing their knowledge and skills for all aspects of their practice while ensuring evidence-informed decision-making; and (2) participating annually in a mandatory continuing competence program (CNA, 2015). A key component of both activities is self-reflection, but the use of this skill for independently developing and maintaining practice expertise is far different from how it is used within the mandatory continuing competence program (LaRiviere, 2019; Nelson & Purkis, 2004).

     Participating in Mandatory Continuing Competence. While CNA (2015) endorses the continuing competence program as ensuring RNs' competence, Nelson and Purkis (2004) argued that mandatory reflection negates the professional knowledge needed for RNs to function skilfully and competently. Fifteen years later, LaRiviere (2019) reported similar findings in a qualitative phenomenological study about the influences of continuing professional development as a regulatory requirement for the continuing competence of Alberta's RNs. In both studies the authors claimed that mandatory reflection is merely an economic rationalist aim that places the onus for professional development entirely on the individual rather than on the employer. LaRiviere further noted that this type of learning has contributed to RNs being overwhelmed and exhausted in Alberta hospital workplaces due to constant change, heavy workloads, and lack of educational supports. Moreover, deregulation within Alberta hospitals has left employers free to determine the skill base and skill mix needed for staffing healthcare environments. Notably, rural RNs have experienced increased RN-to-patient ratios and increased numbers of LPNs and

healthcare aides (HCAs) within the healthcare team (Canadian Institute for Health Information [CIHI], 2019). This change has placed a greater burden on rural RNs to lead and mentor an eclectic mix of staff (Smith & Vandall-Walker, 2017) whilst developing and maintaining practice expertise using self-reflection as their guide (LaRiviere, 2019; Nelson & Purkis, 2004).

Developing and Maintaining Practice Expertise. For rural RNs, developing and maintaining their generalist expertise involves participating in a wide variety of formal continuing professional education programs (see Appendix A) across several nursing practice fields (AHS, 2023a). Engaging in these programs requires time, money, and the need to travel, which for many Canadian rural RNs has been exceedingly challenging (Sedgwick & Pijl-Zieber, 2015; Smith & Vandall-Walker, 2017) due to critical staffing shortages and work overload (LaRiviere, 2019; Smith & Vandall-Walker, 2017). Furthermore, developing and maintaining one's practice expertise requires participating in informal just-in-time learning activities using blended educational resources to manage the unknowns and unanticipated elements in the complex and often chaotic rural hospital workplace. These resources typically include a mix of human, online, and hardcopy resources (Kosteniuk et al., 2019). As previously discussed, human resources such as CNEs are seldom available to support rural RNs' just-in-time learning activities. Therefore, many rural RNs have depended on an assortment of evidence-based hardcopy and online resources to support updating their nursing knowledge and to make specific decisions about their nursing practices (Kosteniuk et al., 2019).

Accessing online resources involves RNs using digital technologies such as fixed and portable computer workstations and/or personal digital assistants (PDAs) like smartphones, tablets, or laptop computers (Canada Health Infoway, 2020). Stemming from the COVID-19 pandemic, programs leveraging digital technology in the forms of videoconferencing or tele-health (via digital access to expert physicians) have emerged in the United States as viable ways

to provide expert care to patients in rural hospitals compromised by nurse and physician shortages (Serafini et al., 2023). Likewise, Baylak et al. (2020) promoted telehealth – now termed virtual care (British Columbia College of Nurses & Midwives, 2023), as an effective strategy for rural Canadian RNs in British Columbia to use a telephone or tablet to call an expert physician virtually into a trauma room. However, its use has been plagued by barriers such as cost and inadequate Internet infrastructure. Also in Canada, virtual Zoom simulation scenarios (via mobile phone) have been used by nursing staff in Wabasca, Alberta to manage changing protocols associated with the COVID-19 pandemic (Franchuk, 2021).

Although there has been a shift to increasing RNs' use of advancing and emerging technologies in some rural hospital workplaces globally, Booth et al. (2021) contended that nursing has not embraced digital practice in ways needed to sufficiently ensure that nursing practices remain relevant within digitally enabled societies. They suggested that these challenges may be due to the immaturity of the technological infrastructures within some hospitals. This latter contention was reinforced by the Canadian Radio-television and Telecommunications Commission (2020), who claimed that only 37% of Alberta (the province in which this study was conducted) rural communities maintained the Internet infrastructure required to support current digital technologies. Moreover, Booth et al. (2021) claimed that using enhanced digital practices such as artificial intelligence and robotic systems has been challenging for RNs globally. They suggested that nursing needs to accelerate its transformation to a digitally enabled profession through upskilling in data science, investing in and leading digital health developments, and championing digital informatics. It is amidst these technology challenges that Canadian rural RNs must embrace developing and maintaining their practice expertise using just-in-time learning activities, while also contending with rural RN staffing shortages, as explained next.

Canadian Rural Registered Nurses

In 2021, Canada's healthcare system employed 280,097 RNs, which is a drop from 282,394 in 2019 (CIHI, 2023). Moreover, the percentage working in rural or remote areas declined through the years 2015-2021 (CIHI, 2023), while not keeping pace with rural population growth (CNA, 2020). In 2015, 56% of the RNs employed in the rural hospital workplace had been employed 5 years or less (MacLeod, Stewart et al., 2019). Furthermore, many seasoned RNs continued to retire or left for education or alternate jobs and never returned (CIHI, 2020). Dismally, national RN averages resemble retention rates of rural RNs in Alberta, as outlined below.

Alberta Rural Registered Nurses. Recruitment and retention of registered nurses in rural areas remains an issue provincially. In 2021, the percentage of people living in rural AB was 17.65% as compared to the Canadian rural population of 16.1% (Statistics Canada, 2023). Also in 2021, the number of RNs working in rural and remote Alberta was 3322 (9.66% of the Alberta RN workforce) – the latest statistics for the province in which the proposed study was conducted – a number that has dropped by 35 since 2018 and equals the percentage of RNs who had been employed in rural areas in 2012 (CIHI, 2023). Moreover, the retention rate of newly regulated nurses had dropped to 82% in 2020 from 86% in 2019 (CIHI, 2020). Furthermore, the situation for rural hospital workplaces may be even bleaker than reported, as some regulated nurses who were identified as rural may have been working in rural home care, community health, or commuting to work in urban centres (Smith & Vandall-Walker, 2017).

In central Alberta, annual RN recruitment rates have consistently equalled annual retention rates over the past few years, which has created a revolving door of new RNs and challenges to sustaining a workforce with generalist practice expertise (S. Hope [site leader], personal communication, August 7, 2021). Furthermore, RNs who have practice expertise from

elsewhere may at first be advanced beginners (Benner, 1982) in the complex and diverse rural

hospital workplace. It takes time and support to advance one's skillset and experience from

novice to expert (Benner, 1982). As previously stated in this chapter, Benner suggested that RNs

pass incrementally through five levels of proficiency: novice, advanced beginner, competent,

proficient, and expert.

Concerningly, in the rural hospital workplace, it is not unusual for advanced beginner

RNs to be providing patient care in high acuity areas such as the ED or labor and delivery room

or to be expected to fulfill charge RN responsibilities, without the support of competent,

proficient, or expert RNs (Smith & Vandall-Walker, 2017). Although these expectations may be

typical of RNs in other areas of nursing, the significant difference in the rural hospital workplace

is twofold: RNs are expected to care for diverse patients across the lifespan and typically, human

resources to support them in learning how to effectively engage in these activities are lacking

(CARRN, 2020; MacLeod, Kulig et al., 2019; Sedgwick & Pijl-Zieber, 2015; Smith & Vandall-

Walker, 2017). Although rural RNs may have access to blended educational resources, they

typically only have their ingenuity to self-determine their learning needs and how to meet these

learning needs (Smith, 2014; Smith & Vandall-Walker, 2017). It is in this climate of workplace

challenges that rural RNs must engage in just-in-time learning activities using blended

educational resources. Thus, it is important that blended educational resources can support these

learning activities.

Blended Educational Resources Can Support Rural RNs' Just-In-Time Learning Activities

During this scoping review I had cast a broad net to get a sense of the existing literature

about the just-in-time learning activities of RNs using blended educational resources in the rural

hospital workplace (see Appendix B). Samples in the studies range from including only rural

RNs to incorporating academicians and a mix of rural RNs and an array of practitioners (i. e.

nurse educators, urban RNs, enrolled nurses, allied health workers, nursing assistants, pharmacists, physicians, and social workers). Sample sizes ranged from n=7-55 in qualitative studies, and n=591-3822 in quantitative studies. Study location and number of studies included the developed countries of Australia (5), Canada (5), and the United States (2). I included six discussion papers, two from Canada, one from Switzerland, and three from the United States.

One overarching theme emerged from the literature, *Blended Educational Resources Can Support Rural RNs' Just-In-Time Learning Activities.* This theme encapsulates two intertwined sub-themes: *Type of Blended Educational Resource Matters* and *Organizational Support Matters*. I describe these themes this way: Blended educational resources inform and support rural RNs to practice capably and safely during their just-in-time learning activities when they are designed to support the type of knowledge and skills needed to enact the RN role quickly and in-the-moment and when their use is well supported by human, technological, and hardcopy resources in the rural hospital workplace.

In the first theme, I include the type of blended educational resources rural RNs and practitioners use to engage in just-in-time learning activities. Studies in this theme have been conducted at society's micro and meso levels. The micro level encompasses RNs and practitioners in individual rural hospitals and the meso level includes those within the same country. In the second theme, I highlight how organizational facilitators and barriers have impacted the just-in-time learning activities of rural RNs and practitioners. Studies in this theme have been generated at both micro and meso levels, but I also include three discussion papers aimed at providing just-in-time learning resources on a global scale (at the macro level).

Type of Blended Educational Resource Matters

The nature and scope of rural RN practice involves caring for complex, diverse patients across the lifespan (CARRN, 2020; MacLeod, 1999; MacLeod, Kulig et al., 2019; Scharff, 2013;

Smith & Vandall-Walker, 2017) in a variety of situations ranging from simple (obvious) to chaotic, as highlighted earlier in this chapter. This type of practice being the case, rural RNs must frequently access a variety of blended educational resources in-the-moment to inform capably and safely enacting many of their day-to-day and specialty nursing practices.

Day-to-Day Practices. In this section, I reviewed one qualitative study conducted at the micro level and two studies (one qualitative and one mixed methods) conducted at the meso level. I learned that blended educational resources have been supporting some Australian and Canadian rural RNs and practitioners in their just-in-time learning activities, and in turn, their ability to practice capably and safely.

At the micro level, Martyn et al. (2019) used an appreciative inquiry research design to observe the day-to-day medication administration practices of 20 novice to expert RNs on a medical unit in a rural regional hospital in Australia. They found that medication administration was a complex process that involved RNs using strategies beyond evidence-based procedural frameworks to bring together (in-the-moment) personnel and educational resources to provide safe patient care. While Martyn et al. addressed the different strategies these RNs had used to administer medications in routine (obvious) versus complex situations, they did not highlight the decision-making processes these RNs had engaged in during that work.

At the meso level in Canada, from a study conducted in 2018, Kosteniuk et al. (2019) reported that 1,646 surveyed RNs identified the Internet as the online tool they had used most often to support their day-to-day practices. Its use was followed by evidence-based online or hardcopy policies or protocols, clinical practice guidelines, textbooks, or journals. These respondents had also depended on practice support resources such as peers or CNEs (if available) to inform their day-to-day practices. However, details of their decision-making processes and the situations requiring them to use these resources were not included in Kosteniuk et al.'s report.

51

In Newfoundland and Labrador, Canada, Curran et al. (2019) used a case study methodology to interview and survey 55 individuals from the professions of medicine (9), nursing (20), pharmacy (4), and social work (22) in the province to learn their perceptions of how self-directed learning accompanied by digital technology had supported their continuing professional education. A significant finding in this study was that rural practitioners perceived and reported digital technology at point of care as enabling them to stay current when practice learning needs arose in-the-moment (Curran et al., 2019). Likewise, Rees et al. (2021) found that 27 RNs from a mix of metropolitan, regional, rural, and remote areas in Queensland, Victoria, South, and the Northern Territory of Australia had often used personally bought digital devices at point of care to provide capable, safe care. Rees et al.'s grounded theory of economising learning explains the process of how individual RNs define a personal learning curriculum, gain awareness of their knowledge deficits, identify learning opportunities, and balance these opportunities with personal financial costs. This theory is helpful to understanding RNs' learning activities at point of care, but again did not address the variety of practice situations impacting the just-in-time learning activities of rural generalist RNs.

Specialty Practices. Relevant to rural RNs' use of blended educational resources to engage in just-in-time learning activities to inform their specialty practices, I reviewed one quantitative and two qualitative studies conducted at the micro level, as well as one micro-level discussion paper, and two meso- and three macro-level discussion papers. Although the authors in the following seven articles highlighted blended educational resources as supporting the just-in-time learning of participants or respondents at point of care, they did not describe what decision-making processes these individuals had used. Furthermore, in the first four articles it was difficult to ascertain the context (simple to chaotic) that had required participants or respondents to engage in just-in-time learning activities.

Burman et al. (2021) reported that a blended approach to continuing education for a mix of 1084 rural RNs and practitioners surveyed in Wyoming, United States was an effective means to support an array of specialty practices. This initiative, termed ECHO, consisted of multilevel loop (informal and formal) learning interventions wherein participants had self-determined their current just-in-time practice learning needs, were provided didactic training on relevant core professional development topics, and then had discussed applicable case presentations with specialists in professional learning networks. Respondents reported a 90% satisfaction rate with this type of education and appreciated the expertise of the team, learning in a collegial environment, and learning from others.

Likewise, Zhu et al. (2021) interviewed seven physicians, 10 advanced practice providers, and 11 nurses in 18 hospitals across six Midwest states in the United States about their perceptions of the effectiveness of a single hub-and-spoke telemedicine network on their rural ED practices. They found that the network had provided participants both formal training and real-time training opportunities, but that it was the real-time training that had occurred most often. Participants perceived that real-time training complemented formal training and had distinct advantages for supporting their point of care learning and ability to practice safely.

In Australia, Riley and Schmidt (2016) interviewed 14 nurses (managers, clinical nurse specialists, RNs, enrolled nurses, and assistant nurses) in three rural hospitals using an appreciative inquiry research design. These nurses perceived that online educational resources had provided them with good access to education and new knowledge to support their specialty practices because of the flexibility and low cost afforded by the online environment.

At a micro-level, the nursing team at the Wabasca/Desmarais Health Care Centre in Alberta, Canada, has used a mobile phone and low-fidelity simulation as just-in-time learning modalities to quickly learn how to capably protect their patients, community, and themselves

during the COVID-19 pandemic (Franchuk, 2021). In a discussion paper located on the Alberta

Rural Health Professions Action Plan (RhPAP) website, Franchuk highlighted how these rural

nurses had used virtual Zoom simulation scenarios across a personal mobile phone to learn how

to safely don and doff personal protective equipment to provide evidence-based care for patients

experiencing a range of COVID-19 symptoms. Eighteen months later, this team had continued to

engage in virtual learning to support their skill sets. Moreover, their creative ideas have since

been used by others across the country to engage in just-in-time education about COVID-19.

Similarly, but at a meso-level, Baylak et al. (2020) in a discussion paper identified

telehealth (virtual care) as an effective emergent technology for providing Clinical Outreach and

Diagnosis Intervention (CODI) services to support the just-in-time learning needs of rural

physicians and nurses in British Columbia, Canada. CODI (a pilot project) is an iPhone-based

application providing physicians instant access to experienced clinical support any time of day.

At a meso-level as well, and to attend to rural RNs' limited access to continuing

education resources, a hospital alliance in southeastern North Carolina, United States developed

a shared regional asset, nurse-led, mobile simulation program for nurses in 13 hospitals across 11

counties (Smith et al., 2020). In a discussion paper about this innovation, Smith et al. suggested

that mobile simulation using high-fidelity simulators and evidence-based, preprogrammed

scenarios (aboard a mobile laboratory truck) had been effective in providing rural nurses with

just-in-time education about infrequently enacted procedures. They purported that each scenario

could be tailored to the unique learning needs of nurses in the various sites.

At the macro level and to globally attend to the changing dynamics associated with the

COVID-19 pandemic, the World Health Organization (2022) launched a massive web-based

educational intervention on OpenWHO, its Health Emergencies learning platform. On this

platform, individuals were provided with access to free just-in-time training for 30 different

COVID-19 topics, guided by emerging evidence-based knowledge (Utunen et al., 2021). According to Utunen et al., the benefits of this learning format have included equity in access to health education, accessibility to people across the world (web-based, free, low bandwidth adjusted, and available on any device), flexibility in how it is provided (self-paced), learner-centricity to meet a variety of learning needs (user-friendly options that offer learners choice in their learning), and quality resources (courses based on emerging scientific evidence). As of March 2021, the OpenWHO platform included 50 languages and 5 million course enrollments (Utunen et al., 2021). It boasted a 50% completion rate of courses related to COVID-19.

On a somewhat smaller scale and to also attend to the changing policies and practices associated with the COVID-19 pandemic, Bell (2020) provided a one-page online discussion resource in the *American Journal of Critical Care*. In this document, Bell offered guidelines to support RNs in practicing safely when engaging in just-in-time learning activities to learn new policies surrounding personal protective equipment use or when redeployed to work in a different clinical setting. I surmised from these guidelines that practicing safely amidst evolving COVID-19 protocols and staffing shortages required RNs to use self-reflection and self-efficacy to determine their capabilities and just-in-time learning needs. Likewise, Bradley et al. (2020) highlighted in a discussion paper that quick response (QR) codes had been an effective means for providing practitioners with just-in-time access to changing policies and procedures stemming from the COVID-19 pandemic. They determined that QR codes could be a "game changer" (p. 302) for practitioners' just-in-time learning activities.

From the studies and discussion papers I reviewed, it is apparent that blended educational resources can support rural RNs' just-in-time learning activities. However, type of blended educational resource matters because different types of resources are needed depending on whether the just-in-time learning activities are informing rural RNs' day-to-day or specialty

55

practices. In addition, literature specific to the ways in which blended educational resources

support RNs' just-in-time learning activities during these practices in the rural hospital

workplace is sparse. Most of the literature I have reviewed included other practitioners and did

not address the cognitive processes nor workplace situations ranging from simple to chaotic that

impact rural RNs' just-in-time learning activities during their day-to-day and specialty practices.

Moreover, I learned that organizational support matters because it impacts the choice of

modalities available for rural RNs to engage in just-in-time learning activities, as well as whether

(or not) they are provided with educational supports to learn how to use these modalities.

Organizational Support Matters

In this section, the studies I reviewed were conducted at the meso level and included six

qualitative and four quantitative research designs. I also found three discussion papers, one

written from a micro perspective, and the other two from a meso view. I highlight below the

organizational facilitators and barriers to rural RNs and practitioners engaging in just-in-time

learning activities in their rural hospital workplaces.

Facilitators. Advancing technologies have unquestionably increased rural RNs' access to

blended educational resources over the last decade, which in turn has increased opportunities for

them to find evidence-based information to inform their just-in-time learning activities (Curran et

al., 2019; Kosteniuk et al., 2019; Rees et al. 2021; Riley & Schmidt, 2016; Smith et al., 2020).

Even so, there have also been other facilitators to these activities, which include mentorship

support (Rohatinsky & Jahner, 2016), organizational culture (McClenaghan, 2020), and

innovative learning support initiatives (Baylak et al, 2020; Franchuk, 2021; Mickan et al., 2019).

Access Support. In 2018, Kosteniuk et al. (2019) found that 88% (up from 54%) of

Canada's rural and remote RNs and LPNs had access to the Internet and 84% had access to

electronic communication with other healthcare providers. These nurses also reported accessing

in-house learning resources such as evidence-based hardcopy policies, procedures, and protocols; peers; and CNEs (when on-site). In Newfoundland and Labrador, Canada, rural RNs and registered psychiatric nurses perceived that good Internet service and an organizational culture supporting the use of digital technology have promoted their in-the-moment learning (Curran et al., 2019). Likewise, online learning has worked well for RNs in some Australian rural hospitals when it was linked to organizational goals and participation time was protected (Riley & Schmidt, 2016). Similarly, digital resources have facilitated just-in-time learning opportunities for RNs in some parts of rural Australia because they have reduced the need for these individuals to travel (Rees et al., 2021). Equally, a mobile laboratory truck housing a high-fidelity simulator has been improving access to evidence-based just-in-time learning resources for nurses in 13 rural hospitals across 11 counties in North Carolina, Unites States (Smith et al., 2020).

Mentorship Support. Formal and informal mentorship have been identified as good ways for seasoned RNs to support new rural RNs' just-in-time learning activities in one rural hospital in Saskatchewan, Canada. Rohatinsky and Jahner (2016) interviewed a mix of seven RNs and LPNs to learn about mentorship practices for new staff. They learned that mentorship has contributed to the development of trust between new and seasoned nurses and that once trust was developed, new nurses would ask their mentor for advice when learning in-the-moment learning.

Organizational Culture. To learn about the connection between working conditions and learning behaviours of RNs and nurse practitioners from across Ontario, Canada, McClenaghan (2020) conducted a cross-sectional online survey. Formal and informal learning were examined in relation to perceived discrimination, participation in organizational decision-making, an increase in workload, and whether the respondents could decide their own working hours. Although only one percent (1326) of 115,385 RNs responded to the survey, the results are quite interesting because some are not necessarily supportive. Respondents reported that they have

57

used informal learning activities to enhance communication and teamwork skills and to learn about health and safety policies related to paid employment. However, participation in policy decisions and experiencing discrimination had the strongest impact on respondents' organizational or managerial informal learning behaviours. Moreover, discrimination and workload increase were both associated with respondents engaging in informal learning activities to learn about their rights. While these results indicate correlations between RNs' working conditions and their informal learning behaviours, they do not reveal the blended educational resources nor cognitive processes they had engaged in during their informal learning activities.

Innovative Learning Support Initiatives. At a managerial level, 12 senior academic and clinical healthcare managers in Brisbane, Australia recommended that innovative approaches to professional development for practitioners be collaboratively implemented by universities and key stakeholders (Mickan et al., 2019). They perceived that such an initiative could promote the lifelong learning needed for practitioners to meet the needs of constantly changing healthcare workplace expectations and demands. They suggested that continuing educational approaches should align with current practice needs to promote relevancy and currency, be made available through connected and flexible learning opportunities to enhance accessibility, and be in a stackable micro-credential format to promote further education for individuals.

In Alberta, Canada, the innovation of using low-fidelity simulation across a mobile phone has supported nursing staff and practitioners with developing their expertise to manage the care of patients experiencing COVID-19 (Franchuk, 2021). Likewise, the implementation of a pilot project using telehealth (virtual care) has been an effective way of supporting the just-in-time learning of rural RNs and physicians in British Columbia, Canada by providing access to expert physicians during emergent situations in the rural ER (Baylak et al., 2020).

From this review, it is apparent that in some organizations, facilitators have supported

rural RNs in their just-in-time learning activities and thus, their ability to practice capably and safely. However, several barriers to these practices continue to exist as explained below.

Barriers. Some barriers to rural RNs and practitioners engaging in just-in-time learning activities using blended educational resources have included access issues (Curran et al., 2019; Kosteniuk et al., 2019; Mather et al., 2019; Rees et al., 2021), information overload (Curran et al., 2019; Rees et al., 2021), and an unsupportive organizational culture (Burman et al., 2021; Curran et al., 2019; Kleib & Nagle, 2018; Mather et al., 2019). In addition, lack of time (Burman et al., 2021; Rees et al., 2021), challenges with informatics competency (Kleib & Nagle, 2018), cost, and inadequate Internet infrastructure (Baylak et al., 2020) have also emerged as barriers. I elaborate on these barriers below.

Access Issues. Across Canada, 10% of the nurses in Kosteniuk et al.'s (2019) survey still lacked workplace access to high-speed Internet in 2018 and only 75% with Internet access reported that they had consistently used it to update their nursing knowledge; many others had preferred accessing in-person resources. Similarly, in Newfoundland and Labrador, Canada, Curran et al. (2019) found that practitioners from the professions of medicine, nursing, pharmacy, and social work perceived that poor Internet services and technical issues have been barriers to their self-directed learning in-the-moment. In Australia, Tasmanian nurses have experienced challenges with being allowed to use mobile devices at point of care to support their nursing practices because six nurses in executive leadership positions across various healthcare organizations perceived that the potential for nurses' lack of digital professionalism outweighed their need for real-time access to current, relevant practice information (Mather et al., 2019). These authors concluded that protocols about technology use needed to be revised to establish a balance between the risks and benefits of nurses using information technology in real-time at point of care. Conversely, 27 RNs in other areas of Australia were encouraged to use handheld

technology to support their practices but had to purchase that technology themselves, which for

some, had reduced their access to online educational resources (Rees et al., 2021).

Information Overload. In the perception of healthcare providers in Newfoundland and

Labrador, Canada (Curran et al., 2019) and RNs in some parts of Australia (Rees et al., 2021),

even if they had access to digital information, the overwhelming number of online resources to

navigate in-the-moment has been a barrier to their just-in-time learning. To overcome this

barrier, Curran et al. recommended that organizational and workplace policies be generated to

foster and value effective digital connectivity and use, and that professional development

activities be provided to enhance individuals' digital literacy.

Unsupportive Organizational Culture. Lack of support to engage in just-in-time learning

activities was evident in some rural hospitals in Australia (Mather et al., 2019), Canada (Curran

et al., 2019; Kleib & Nagle, 2018), and the United States (Burman et al., 2021). A theme across

these studies was that leaders within the various organizations had refused to support

practitioners in using digital technology to support their learning activities at point of care.

Lack of Time. Rural RNs working in some parts of Australia (Mather et al., 2019), and

practitioners engaging in the ECHO initiative in the United States (Burman et al., 2021)

identified lack of time as a significant barrier to engaging in just-in-time learning activities.

Challenges With Informatics Competency. Informatics competency has been identified

as problematic for a mix of 2844 RNs and psychiatric nurses from a variety of clinical settings

across Alberta, Canada (Kleib & Nagle, 2018). Kleib and Nagle used a cross-sectional

descriptive survey to learn that these nurses perceived their competencies as highest on

foundational computer literacy skills and lowest on information and knowledge management.

Furthermore, respondents reported that the most significant factors impacting their informatics

competency had been the quality of informatics training provided by employers and how well

they had been supported by their employers to use technology.

Cost and Inadequate Internet Infrastructure. Baylak et al. (2020) labelled cost and inadequate Internet infrastructure as challenges to transforming rural healthcare using telehealth (virtual care) services in British Columbia, Canada. However, these authors contended that newer software is more cost effective than older hardware and that retention of physicians and RNs in rural hospitals outweighs the cost of implementing telehealth services. They also noted that inadequate Internet infrastructure has been mitigated during this pilot project through implementing a toll-free telephone number for rural practitioners to access expert physicians.

My review of the existing literature has increased my insight into the facilitators and barriers impacting the just-in-time learning activities of RNs using blended educational resources in the rural hospital workplace. I learned that organizational supports such as increased access to the Internet, mentorship by seasoned RNs, supportive organizational culture (negative or positive), and innovative learning initiatives have supported some rural RNs in their just-in-time learning activities. I also learned that barriers including lack of Internet access, information overload, poor managerial support, lack of time, low informatics competency, cost, and inadequate Internet infrastructure have significantly impacted how effectively some rural RNs can engage in just-in-time learning activities using blended educational resources. Although I did learn about some situations requiring just-in-time learning activities (medication administration, emergency practices, COVID-19 protocols, and trauma care), I noted extensive gaps and limitations in the existing literature about the variety of situations rural RNs encounter during just-in-time learning activities, which I now address.

Gaps and Limitations in the Literature

Despite searching numerous databases, the literature I found specific to the just-in-time learning activities of RNs using blended educational resources in the rural hospital workplace is

sparse. I identified a lack of study findings/results that focus on the cognitive decision-making processes that RNs use to determine their just-in-time learning needs for situations ranging from simple to complex. In addition, I found little information about the blended educational resources required to meet these learning needs. Moreover, there was little mention of the personal attributes of self-efficacy, capability, and self-reflection required to engage in just-in-time learning activities. Notably, of the 12 studies (excluding the six discussion papers) I critically reviewed, just-in-time learning was not the focus but arose as a peripheral finding. Even so, I found evidence that supports the notion that blended educational resources can support the just-in-time learning activities of rural RNs during their day-to-day and specialty practices. Furthermore, I learned that the type of blended educational resource and the organizational support both matter when rural RNs attempt to engage in just-in-time learning activities.

Given the paucity of existing literature about the just-in-time learning activities of RNs using blended educational resources in the rural hospital workplace, further research was warranted to address this lack. The findings of my study further understanding about the decision-making processes that rural RNs (ranging in experience from novice to expert) use to determine their learning needs and the blended educational resources needed to meet these learning needs for a variety of just-in-time learning situations (ranging from obvious to chaotic). The findings also provide insights into how rural RNs use self-efficacy and self-reflection skills to develop their capability when engaging in just-in-time learning activities. Understanding these aspects has enabled me to generate substantial recommendations for rural hospital stakeholders that can support creating educational, organizational, and policy initiatives to improve the just-in-time learning activities of rural RNs using blended educational resources. In turn, these ideas can assist rural RNs to confidently practice capably and safely.

Chapter Summary

In this chapter, I described the procedures I had used to review the literature and provided a synthesis and critique of the literature relevant to my phenomenon of study. To begin, I located my literature review within the interpretive description research methodology. I then outlined how I had searched the literature including my processes, search criteria, and analysis measures, after which I identified the limitations of the review. Next, I provided a synthesis of the informal learning theories of Eraut (2000, 2004a, 2004b), Marsick and Watkins (1990, 2015), and Watkins and Marsick (2021) and how they relate to rural RN practice. I then synthesized the literature about workplace learning, distilling it down from across disciplines to the Alberta rural hospital workplace. After that, I critically reviewed the literature about the just-in-time learning activities of RNs using blended educational resources in the rural hospital workplace. One overarching theme and two intertwined subthemes emerged: *Blended Educational Resources Can Support Rural RNs' Just-In-Time Learning Activities: Type of Blended Educational Resource Matters* and *Organizational Support Matters*.

Evident from my review is the gap in the existing literature about the just-in-time learning activities of RNs using blended educational resources in the rural hospital workplace, which justified its exploration. Gaining an understanding of this phenomenon has enabled me to generate recommendations for rural hospital stakeholders that can support them in creating strategies to improve the just-in-time learning activities of rural RNs.

In Chapter 3, I describe why I chose interpretive description as my research design and highlight its origins. I then explain the theoretical forestructure for the study, identify my research question and sub-questions, and explain the research design providing an outline and detailed procedures. After that, I identify my timelines for conducting the study, followed by summarizing Chapter 3 and introducing Chapter 4.

Chapter 3. Methodology and Procedures

The purpose of my study was to generate knowledge about the extent to which blended educational resources in the context of the rural hospital workplace support rural RNs' just-in-time learning activities. Understanding this phenomenon enabled me to generate recommendations for rural stakeholders to help these individuals with creating and implementing administrative, educational, and policy initiatives that can improve the just-in-time learning activities of rural RNs. In turn, these strategies may assist these RNs with confidently practicing capably and safely. As stated in the previous two chapters, I used an interpretive description (Thorne, 2008, 2016) research methodology to conduct this phenomenon.

In this chapter, I describe the methodology and procedures of my study in segments. In the first segment, I describe why I chose interpretive description (Thorne, 2008, 2016) as my research methodology and highlight its origins. Next, I provide the theoretical forestructure for the study, which includes locating my theoretical allegiances, disciplinary orientation, and the personal ideas that I hold about reality. In the next segment, I provide my research question and sub-questions, after which I identify the research design, outline the processes of the study, and explain the procedures of the study. I then provide an outline of the timelines associated with conducting the study. The final segments include my summary of this chapter and an outline of Chapters 4 and 5.

Choice of Interpretive Description and Its Origins

Interpretive description afforded a distinct advantage for my study because it provided me with an organizing logic to generate a meaningful scholarly product that can support the specific needs of practicing rural RNs (Thorne, 2016). It is philosophically underpinned by the naturalistic orientations of Lincoln and Guba (1985) and, as such, is based "…in an interpretive orientation that acknowledges the constructed and contextual nature of…health…experiences,

whilst allowing for shared realities" (Thorne et al., 1997, p. 172). Its use is highly evident in the healthcare literature, including the study I conducted during my Master of Nursing (MN) degree.

While searching for studies about the phenomenon I studied, I noticed a plethora of studies in the healthcare literature in which interpretive description had been used. However, I only found one study that included a topic similar to mine and the use of interpretive description as the research methodology, which I suspect is due to the paucity of studies conducted about this topic. In this one study, Mather et al. (2019) used an interpretive description research design to explore advancing just-in-time mobile learning for practitioners in Australian healthcare environments. Other researchers who studied just-in-time learning in healthcare have used quantitative designs (Burman et al., 2021; Cheng et al., 2017; Moore, 2018; ONeill et al., 2018; Peebles et al., 2020; Robertson-Malt et al., 2020) and grounded theory methodology (Rees et al., 2021). For me, a quantitative approach does not align with my assumptions about the nature of knowledge nor the applied nature of the nursing discipline (I elaborate on both topics later in this chapter), and grounded theory is focused on generating abstract theory (Creswell, 2007), which is beyond what is needed to support RNs at the practice level. Interpretive description, however, is a research approach initially developed by Thorne et al. (1997), and enhanced by Thorne et al. (2004), which straddles the chasm between the objective neutrality of quantitative knowledge generation in the medical sciences and the theorizing of social scientists based in the qualitative research designs of ethnography, grounded theory, and phenomenology (Thorne, 2016).

According to Thorne (2016), the research approaches of social scientists do not necessarily align with the pragmatic demands of applied disciplines such as nursing and education, the members of which find that the constraints of the workplace, as discussed in the previous two chapters, do not provide the opportunity to suspend action until a problem is fully understood. Thorne further contended that to advance an applied profession such as nursing,

which consists of a vast knowledge base and consistently changing and dynamic practice circumstances, requires asking research questions underpinned by equal measures of reason, philosophy, and science (rather than one or the other), as well as theoretical structures to organize and synthesize that knowledge base. Hence, Thorne et al. (1997) created interpretive description to underpin generating knowledge that can attend to the "…inherently multifaceted, complex, and diverse practice[s]" (Thorne, 2016, p. 12) of applied sciences, but within the context of their distinctive social mandates and without losing site of individual variations within these groups (Thorne et al., 1997). Therefore, interpretive description has enabled me to interpret the phenomenon of RNs' perceptions of how well blended educational resources have supported their just-in-time learning activities in the rural hospital workplace without losing sight of individual variations within that group. Moreover, it enabled me to identify strategies to inform and support future directions in practices, policies, educational curricula, and research aimed at RNs' just-in-time learning activities in the rural hospital workplace, and in turn, support rural RNs to confidently practice capably and safely. To begin, I provide a theoretical forestructure to identify my integrity of purpose for the study I conducted.

Theoretical Forestructure

In qualitative research, the researcher is an instrument and therefore, their thinking and actions play a meaningful role in shaping the nature, outcome, credibility, and usefulness of that study (Thorne, 2016). The role of being instrument requires the researcher to clarify their theoretical positioning before entering the study (Thorne, 2016). For interpretive description studies, a researcher's theoretical positioning is the second element of the scaffold from which a study is launched — the first is the literature review (Thorne, 2016), as previously identified in Chapter 2. Theoretical positioning is referred to as a theoretical forestructure and includes the following linked elements: locating one's theoretical allegiances, locating oneself within a

discipline, and locating one's personal ideas about reality (Thorne, 2008, 2016).

Locating My Theoretical Allegiances

Interpretive description does not require studies to be explicitly located within a single formal theorization (Thorne, 2008, 2016). Researchers can borrow methods from other qualitative approaches if they justify what has been borrowed and adhere to the assumptions and linguistics of those research cultures (Thorne, 2008, 2016).

My theoretical allegiances are distantly related to the research cultures of philosophy, psychology, and sociology. I borrowed data immersion techniques from Hermeneutic phenomenology (Wilding & Whiteford, 2005) because they align with my willingness to use meditation and time to ponder and interact with the data. I used unitizing and categorizing techniques from Lincoln and Guba's (1985) naturalistic paradigm to support me in sorting and organizing the data from bits and chunks into categories and themes. I also simultaneously followed constant comparison techniques from Strauss and Corbin's (1998) grounded theory because I assumed that some aspects of the realities I studied were socially constructed, which to uncover knowledge about these constructions, required me to compare and contrast different manifestations of them using an inductive and iterative process (Thorne, 2016). I chose Strauss and Corbin's grounded theory data analysis techniques over other types of methods because they did not require bracketing my ideas, thereby enabling me to enter the study with my assumptions about my disciplinary orientation and philosophical ideas about reality. Thus, to attend to my biases, I exercised reflexivity using Dahlberg and Dahlberg's (2019) act of bridling to slow down and self-reflect to appropriately understand my interpretations of meaning within the data set in relation to these assumptions. I elaborate on this technique in the Credibility Assurances section of this chapter. Finally, I used memoing techniques borrowed from Strauss and Corbin, as well as Lincoln and Guba to capture my analytic insights, which I detail in the Capturing Analytic

67

Insights section of this chapter. Next, I locate my disciplinary orientation in the study.

Locating My Disciplinary Orientation

The disciplinary knowledge a researcher possesses shapes every aspect of the research being conducted (Thorne, 2008, 2016). It influences the research questions asked, the literature accessed, the language used, and the design decisions made. Next, I provide my substantive assumptions about my disciplinary orientation and influential personal ideas.

As an RN and nurse educator, my beliefs about reality have been shaped by my rural background, disciplinary heritages of rural nursing and nursing education, post-secondary education, and a pivotal life-changing moment. I have lived rurally my entire life except for one year I spent in the city studying introductory university courses and the three years of my basic nursing education. I have worked as an RN in the complex, diverse, and increasingly chaotic rural hospital workplace for nearly 37 years — 22 years as a generalist specialist and 15 years as a nurse educator. Thus, I have formed an understanding of what it means to live and work rurally and of the factors influencing the just-in-time learning activities of rural RNs. This understanding has also been shaped by the many years I have been studying at the post-secondary level.

Prior to my MN program, I believed that reality could only be viewed as absolute truths (answers were either right or wrong and life was a series of challenges to overcome). My views of reality changed once I was introduced to two grand nursing theories. Carper's (2009) ways of knowing theory led me to understand empirical, aesthetic, ethical, and personal knowing as they relate to my nursing practices. Parse's (2006) human becoming theory helped me to comprehend that reality is constantly changing from moment-to-moment and that experiences are paradoxical in nature. I came to realize that differing views of reality could co-exist simultaneously and that it was acceptable to perceive things or people differently from how others perceive them. Currently, I view reality through a constructivist worldview, wherein individuals seek

understanding of the world in which they live and work through constructing varied and multiple

subjective meanings of their experiences that are contingent upon socio-cultural, socio-temporal,

and socio-spatial contexts (Marshall & Rossman, 2016). I believe that people make sense of the

world in their own terms, that there can be multiple paradoxical perspectives of the same

situation (Parse, 2006), and that these views of reality are contingent upon others' cultures, what

is happening in-the-moment, and the context of the situation (Creswell, 2007).

In addition, teaching in a strengths-based nursing degree program and working with

faculty whose workplace philosophy is underpinned by Cooperrider and Whitney's (2005)

appreciative inquiry theory have supported me in learning to look for strengths in my work and

personal life, rather than focusing on issues. This appreciative stance was reinforced in 2013

when my daughters survived a horrific motor vehicle collision, which left me forever grateful for

what I have, those around me, and every day of life. These beliefs have influenced the personal

relationship I have to the ideas I hold about reality.

Locating My Ideas About Reality

My personal views of reality are shaped by my axiological, ontological, and

epistemological assumptions. Axiology in relation to qualitative research refers to the

assumption that all qualitative research is value-laden and includes the value systems of the

researcher, the theory, the paradigm used, and the social and cultural norms of both the

researcher and the participants (Lincoln & Guba, 1985). I acknowledge that I entered my study

with values and biases stemming from my disciplinary heritages and assumptions about nursing,

living rurally, and looking for positive groundings in my life. These assumptions align with the

values of interpretive description and the naturalistic paradigm in which it is based, wherein the

contextual and constructed nature of reality and the mixed realities of individuals in the

healthcare workplace are acknowledged. I describe below how interpretive description aligns

with my ontological assumptions.

Ontology refers to the nature of reality (Creswell, 2007). For researchers, the fundamental philosophical question is "How does the researcher know what [they] know?" (Creswell, 2007, p. 17). As previously stated, I view reality through a constructivist lens. From a constructivist perspective, ontology is based in the naturalistic paradigm (Lincoln & Guba, 1985). It is subjective and multiple and as seen by the participants in a study (Creswell, 2007).

The interpretive description approach recognizes that the applied mind tends to discover the subjective and multiple associations, relationships, and patterns within a phenomenon (Thorne, 2016). Thus, researchers using interpretation rely on practical and analytical methods to understand 'what does this mean?' to form description beyond documentation and into sense-making (Thorne, 2016). They recognize the inherent value in carefully and systematically analyzing a phenomenon and placing "that analysis back into the context of the practice field, with all of its inherent social, political, and ideological complexities" (Thorne, 2016, p. 57). RNs in the rural hospital workplace have experienced subjective and multiple realities within the context of the Canadian healthcare system, which is filled with inherent social, political, and ideological complexities. Therefore, a naturalistic ontological perspective that enabled using a constructivist epistemological lens to understand these mixed realities was appropriate for conducting my study.

Epistemology is the theory of knowledge (Creswell, 2007). Its fundamental philosophical question is "What is the relationship between the researcher and that being researched?" (p. 17). For constructivists, that relationship is subjectivist, wherein the inquirer and participants are fused into a single entity (Lincoln & Guba, 1985). Constructivists attempt to lessen the distance between themselves and those being researched through collaborating with them and spending time with them (Creswell, 2007).

Constructivist researchers using an interpretive description methodology gain insight into participants' multiple constructions of reality within their practical context through observing and interviewing them, as well as by exploring the many factors influencing their realities (Thorne, 2008, 2016). I assume that conducting interviews and immersing myself in the data lessened the distance between my viewpoints and those of the participants. I also assume that *a priori* theory — knowledge that is considered true independent of experience (Creswell, 2007) — cannot encompass the multiple realities (Thorne, 2016) experienced by RNs in an applied practice setting such as the rural hospital workplace. Furthermore, I assume that understanding the multiple realities of a nursing practice phenomenon required me to generate knowledge that emerged from or was based in that phenomenon (Thorne, 2016). Conducting this type of research necessitated generating research questions and using data collection and analysis techniques that aligned with my conceptual and substantive assumptions. As stated in Chapter 1, my research questions and subquestions were underpinned by Cooperrider and Whitney's (2005) appreciative inquiry theory and my interpretations of the findings were informed by Hase and Kenyon's (2007) heutagogy theory and the informal learning theories of Eraut (2000, 2004a, 2000b), Marsick and Watkins (1990/2015), and Watkins and Marsick (2021).

Research Question and Sub-Questions

In qualitative research, it is recommended that researchers begin their inquiries using a broad, central, open-ended research question that restates the purpose of the study (Creswell, 2007). For my inquiry, my broad, strengths-based central research question and related sub-questions were as follows:

- To what extent do RNs in the rural hospital workplace perceive that blended educational resources support their just-in-time learning activities?

    1. In what situations do rural RNs perceive that they require just-in-time learning

activities?

2. What intrinsic cognitive processes do rural RNs perceive they use to engage in

    just-in-time learning activities?

3. What blended educational resources (human and tangible) do rural RNs perceive

    as influencing their decisions about engaging in just-in-time learning activities?

4. What blended educational resources (human and tangible) do rural RNs perceive

    would improve their ability to practice capably and safely?

Next, I reiterate my research design, outline the processes of the study, and detail the procedures

I used to conduct the study.

Research Design, Outline, and Procedures

As previously stated, I used an interpretive description (Thorne, 2008, 2016) research

design for my study, as its philosophical roots in the naturalistic paradigm aligned with my

axiological, ontological, and epistemological views, study aim, and research questions. As

follows is the outline of the study (see Table 4), a brief overview of the procedures of the study,

followed by a synthesis of each of these procedures.

Table 4

Outline of the Study

Description	Stage
• Obtained ethics approval.	1
• Recruited participants.	2
• Interviewed 12 participants.	3
• Analyzed data and wrote findings chapter (including member checking).	4
• Re-interviewed one participant and recruited one new participant.	5
• Analyzed data and completed findings chapter (including member checking).	6
• Compared findings to the literature and wrote the discussion/conclusion chapter.	7
• Rewrote the first three chapters.	8

The first step of my study, after obtaining ethics approvals from Athabasca University

(see Appendix C) and Red Deer Polytechnic (see Appendix D), involved recruiting participants.

Creswell (2007) and Thorne (2016) both suggested that there is no set number of participants to recruit for qualitative research designs; rather, the sample size is dependent upon what the researcher is trying to achieve. I was trying to achieve maximal variation in the sample, so I continued sampling until I reached that point (I elaborate on my recruitment end point in the Sampling Techniques section of this chapter). Although I anticipated that 12-15 participants would be an adequate sample size for my study, as that number was sufficient for my previous study using an interpretive description research design (Smith, 2014), I found that 12 participants was an adequate size prior to engaging in theoretical sampling to re-interview one participant and recruit one new participant.

After conducting the first two interviews, I began data analysis. Conducting participant interviews and data analysis was an ongoing inductive and iterative process until I was satisfied that the phenomenon had been fully explored within the sample. As I generated themes, I concurrently wrote the findings chapter. Once I had completed that chapter, I returned to the literature in search of new, relevant studies, as well as to compare my findings to the existing literature. I then wrote the discussion/conclusion chapter, followed by revising the first three chapters. During this process I checked in with my dissertation supervisor at various points (described in the Credibility Assurances section of this chapter) to ensure that the procedures of my study were appropriate and robust. Several components were included in the procedures of my study. First, I address the data collection process.

Data Collection Process

In keeping with Thorne's (2008, 2016) interpretive description methodology, the data collection process was conducted concurrently with data analysis using a 'zigzag' method once the first two interviews were completed. Zigzagging involves the researcher going out to the field to collect information, returning to their office to analyze and compare that data to

previously collected data, and returning to the field to collect more information (Creswell, 2007). These activities are repeated until the phenomenon is fully explored. For my study, I began the data collection process by recruiting participants.

Participant Recruitment

Participant recruitment involves inviting potential participants to voluntarily take part in a study (Creswell, 2007). Following ethics approval, I sent an email letter (see Appendix E) followed by a telephone call to the CRNA to ask if they would distribute Letters of Information/Informed Consent (see Appendix F) via email to potential participants. CRNA is the regulatory body for RNs in the province of Alberta. After three weeks of no response, they informed me that CRNA no longer facilitates research. At that point, I brainstormed other recruitment strategies with a faculty peer, after which I decided to contact the three following groups: the Alberta Association of Nurses (AAN), the United Nurses of Alberta (UNA), and the RhPAP group. After discussing these plans with my dissertation supervisor, I submitted an ethics modification event form to AU's Research Ethics Board identifying this change and received approval for the change the next day (see Appendix G). From there, I emailed AAN, UNA, and RhPAP, including an attached the Letter of Information/Informed Consent describing the study, to ask if they would facilitate participant recruitment – all three agreed to do so. The AAN placed a shortened version of the Letter of Information/Consent on their website and UNA emailed a similar version of that letter to rural RNs across the province. RhPAP used word-of-mouth to share the information. The response to my callout for participants was astounding; I received 131 emails of interest. Next, I made decisions about who to recruit for my sample.

Sampling Techniques

Sampling involves deciding what subset of the theoretical whole population to be studied will best represent the phenomenon being studied (Thorne, 2008, 2016). Initially, I used

convenience sampling to invite participants who were available to participate (Richards &

Morse, 2007). Those who had emailed me their interest in the study were sent the Letter of

Information/Invitation. As I read their emails, I recognized that I needed to ascertain their place

of work to determine if they met the inclusion criteria and to ensure that the sample included

participants from across the five AHS zones and CH. The potential participants I contacted first

were those who had emailed me their completed consent forms. I asked each of them the location

of their place of work and if they practiced as a generalist. I anticipated initially recruiting 12-13

RNs from across Alberta, Canada prior to conducting theoretical sampling. I believed that

accessing and exploring the insights of this number of RNs would provide me with a sample

representative of RNs working in the rural hospital workplace. I further detail this point below in

the Inclusion and Exclusion Criteria section.

As the study progressed, I used theoretical sampling to seek out two RNs who added

maximal variation to the emerging themes, which refers to "…searching for specific types of

cases to know if what [I am] seeing is anomalous or an artifact of some unexplained

characteristics of the sample or study design" (Thorne, 2016, p. 100). My theoretical sampling

involved recruiting one new participant to add depth to the phenomenon and her thoughts about

the conceptual model I had created: *It Varies! Blended Educational Support for Rural Registered*

Nurses' Just-In-Time Learning Activities. It also consisted of re-interviewing one participant to

confirm, clarify, and elaborate on my interpretations of the data and the new model (Thorne,

2008, 2016). The total number of participants I recruited was 13 (see Table 5) because I

continued sampling until I had generated thick, rich descriptions of the phenomenon; negative

cases including anomalies had revealed less than obvious aspects of the findings; and repetition

of findings from multiple sources had generated a comprehensive and complete data set (Morse

et al., 2002). Sampling required setting inclusion and exclusion criteria (Cohen et al., 2018).

Table 5

Participant Information

Participant	Pseudonym	Location
1	Lucy	AHS Central Zone
2	Daisy	AHS North Zone
3	Ned	AHS Central Zone
4	Shelly	AHS Central Zone
5	Mel	AHS Edmonton Zone
6	Chantal	AHS North Zone/CH
7	Ashley	AHS Calgary Zone
8	Ric	AHS Calgary Zone
9	Jane	AHS Central Zone
10	Mickey	AHS Calgary Zone
11	Tina	AHS South Zone
12	Tess	AHS Edmonton Zone
13	Choco	CH

Note. AHS = Alberta Health Services; CH = Covenant Health

Inclusion and Exclusion Criteria. Setting parameters on participant inclusion and exclusion influences who participates in the study (Cohen et al., 2018). I wanted the sample to be as heterogenous as possible to promote maximal variation in the findings. Hence, I recruited RNs inclusive of genders, different ages, levels of education, and races/cultures who had worked (full time, part time, or casually) more than one month in one or more Alberta, Canada rural hospital workplaces. Diversity such as gender, age, race, and cultural background, although not representative of a particular population, enabled me to obtain a more diverse perspective of the phenomenon. In addition, obtaining a sample of RNs ranging from novice to expert (Benner, 1982) and with a variety of time spent working in the rural hospital workplace enabled me to learn how their differing levels of expertise influenced the way they had engaged in their just-in-time learning activities for a variety of situations and timeframes. Once prospective participants had volunteered to participate in the study, I emailed those I had selected to arrange a meeting and to provide them with an opportunity to ask me questions about the study. This

communication was the starting point for obtaining their informed consent.

Consent

Obtaining consent is a fundamental process for conducting research on humans in Canada and involves respecting a participant's autonomy (Panel on Research Ethics, 2022). I describe this process in detail in the Ethical Considerations section of this chapter. Once I had obtained a participant's consent (see Appendices F and H), I began the interview process.

Interview Process

Interviewing has been the mainstay of collecting first-hand knowledge about a phenomenon in qualitative health research because it enables gaining access to subjective knowledge that will be understandable for those in the field for which it is intended (Thorne, 2016). Therefore, I chose to conduct interviews to gain subjective knowledge about rural RNs' just-in-time learning activities. To do so, I offered participants choice between the three following interview methods: virtually using MS Teams, by telephone, or in-person face-to-face. This offering enabled participants to choose the modality that worked best for them. I included an assortment of interview modalities to ensure that I did not create any barriers to participating for individuals living in areas where Internet access was unreliable.

I conducted the initial two interviews over the telephone and therefore was unable to see these participants; the rest of the interviews were conducted via MS Teams and typically with our cameras turned off due to bandwidth issues. No interviews were conducted in-person. I acknowledge that using an assortment of modalities could have impacted my ability to readily compare each participant's contextual data but am confident that this issue did not occur. I preferred to strike a good balance between offering a range of modalities for individuals to participate versus excluding potential participants because of lack of access. During each interview, I used active listening and my nursing assessment skills to evaluate if the participant

77

was experiencing heightened levels of stress – I ascertained that one participant was mildly stressed but when I asked her about it, she willingly continued the interview. When finished this interview, I chatted with the participant to ensure that she was okay. She stated that she was and expressed interest in participating in a follow-up interview.

Each participant was asked to devote approximately one hour of uninterrupted time for their interview. All interviews were conducted on dates and times that were mutually agreeable between us. Each virtual interview was audio-recorded with my Otter.ai transcription application synced to MS Teams on my private home office computer, which enabled simultaneous generation of text. Each telephone interview was audio-recorded using my iPhone in my home private office and the Otter.ai application on my personal computer turned to record. It took me approximately four months to conduct the initial 12 interviews. For each interview, I used an interview guide (see Appendix I) to ensure that I was consistent with the questions I asked. After the sixth interview, I submitted an ethics modification event request to AU's Research Ethics Board to include a ninth interview question in my interview guide (see Appendix J). It included the merits of developing a stackable rural RN nursing certificate to support rural generalist RNs' just-in-time learning activities as the participants I had interviewed repeatedly mentioned the need for this certificate.

After analyzing the data of the original 12 interviews, I submitted an ethics modification event form to AU's Research Ethics Board requesting to include two additional questions to my interview guide (see Appendix K) to be asked with my theoretical sample. The first question asked about participants' experiences in working with a clinical resource nurse (CRN), a new role in the rural hospital workplace that I wanted to further explore. The second queried if the conceptual model *It Varies!* resonated with them, and if they had any changes to recommend. Once I had obtained ethics approval, I used my modified interview guide to conduct interviews.

78

Use of an Interview Guide

When a researcher knows enough about a phenomenon or the domain of inquiry, it can be helpful to develop questions about the topic in advance of the interviews in the form of a semi-structured questionnaire or interview guide (Richards & Morse, 2007). The researcher uses this guide to ask the same questions of all participants, although not necessarily in the same order. Prior to conducting any interviews, I trialled this interview guide with some of my colleagues to get their input and impressions of my questions. They identified the questions as comprehensive. I also sent the interview guide to participants ahead of time, to provide them time to think about their responses before the interview. Several participants indicated appreciation for this gesture.

To begin each interview and to set each participant at ease, I chatted with them about the weather and their work. I then asked if they had any questions about the Letter of Information/ Invitation – none did. I reminded each participant that they did not have to answer any questions if they did not want to and that they might use the information before the findings could be published. I then described situations ranging from simple to chaotic and levels of nursing expertise ranging from advanced beginner to expert. After that, I asked them to choose a pseudonym followed by collecting their demographic information (see Appendix L), which I entered in a hardcopy paper document. To remind the participants of the phenomenon I was inquiring about, I stated it as an overarching question "To what extent do you perceive that blended educational resources support your just-in-time learning activities in the rural hospital workplace?" I also provided them with definitions of just-in-time learning activities and blended educational resources. Next, I used my interview guide and the questions and statements within it (see Appendix I) to explore my subquestions. I initially asked each participant to share a story about some recent just-in-time learning activities they had engaged in, followed by asking the rest of the questions in the interview guide. I ended each initial interview by thanking each

interviewee for participating in the study (Creswell, 2007) and asking them if they would be willing to participate in a follow-up interview. All agreed to a follow-up interview. Immediately following each interview and away from the participant, I used my Otter.ai computer application to generate contextual notes about the interview. I exported these notes using MS Word and saved them in my password protected MS OneDrive on my private home computer.

After the first six interviews I used the first modified interview guide (see Appendix J) to ask an additional question about their thoughts surrounding the development of a rural nursing certificate. Once I had interviewed 12 participants and had generated themes, subthemes, and a conceptual model of my findings, I commenced theoretical sampling. For these two interviews, I added two additional questions to the interview guide (see Appendix K). Again, I generated notes about the context surrounding the interview as I had done with the original sample.

Notes

Notes are used to record impressions and observations about the context of an interview and to inform the analysis of the contextual factors of the environment and the interview data (Thorne, 2016). As all interviews were conducted in my home personal office, I used my personal computer, my Otter.ai application, and MS Word to capture and save my typed description of the interview setting. These notes included the participant's nonverbal behaviours (if on camera) and emotional state; distractions and interruptions before, during, and after each interview; and my responses to the interview. I exported each set of notes to an MS Word document, which I saved on my password protected computer. I added memos about these notes to my research journal. Memos consist of the researcher's questions, musings, and speculations about the data and emerging findings (Creswell, 2007). I further describe my memoing techniques in the Capturing Analytic Insights section of this chapter. Next, I consider the ethics surrounding how the processes and findings of my study impacted the participants.

Ethical Considerations

Prior to recruiting participants in Canada, a researcher must obtain ethics approval from the relevant and appropriate governing institutions (Panel on Research Ethics, 2022) through identifying how they will attend to the many ethical issues that can surface during the processes of data collection, data analysis, and dissemination of the research findings (Creswell, 2007). I obtained approval for my study from the ethics boards of AU and Red Deer Polytechnic (RDP). AU approval (see Appendix C) was necessary because I am an AU doctoral student conducting research under the auspices of that institution. RDP approval (see Appendix D) was needed as I had received RDP funding to conduct the study. This study was of minimal risk to participants as the probability and magnitude of possible harms were no greater than those the participants encounter in everyday life (Panel on Research Ethics, 2022) or when working within the often-stressful rural hospital workplace. Nonetheless, ethical issues I addressed to minimize risk for participants, prior to and during the study, were as follows.

My overall concern was for the welfare of the participants (Panel on Research Ethics, 2022) and to do no harm (Creswell, 2007). To ensure participants' welfare and minimize risk, I used measures to respect their autonomy, reduce their potential feelings of vulnerability, and to ensure their privacy and confidentiality (Panel on Research Ethics, 2022).

Respecting participants' autonomy requires obtaining informed consent through ensuring that their participation is voluntary, informed, and ongoing (Panel on Research Ethics, 2022). To respect participants' autonomy, I began each interview by reviewing the letter of information they had previously received from AAN, UNA, or RhPAP inviting them to participate in the study. Although no participants had any questions or concerns about participating in the study, I reiterated that consent to participate in the study was entirely voluntary and could be withdrawn up until analysis of their data occurred, and that nonparticipation or early withdrawal would not

result in any harm or recriminations to themselves or their employment. I informed them that the

research findings might be published in a peer reviewed journal or disseminated at conferences,

the risks to participating were minimal, but they may benefit from the opportunity to talk about

the supports and challenges surrounding their just-in-time learning activities and/or may learn

something new about themselves that could be useful to their practice. I also informed them of

the potential for them to use this new knowledge before the findings could be published as

situated knowledge (Haraway, 1988), which I define in the [Factors Beyond Evaluation Criteria](#)

section of this chapter. Next, I describe how I safely kept participants' data.

I asked each participant to email me a copy of their signed consent form, which I

downloaded into hardcopy, signed, and kept in a locked box in my private home office. At the

beginning of each interview, I collected each participant's demographic data in the form of a

hardcopy document, which I placed in a locked box in my home private office and separate from

the one containing their consent form. All computers and applications used in the study were

password protected. All hardcopy and computer data will be destroyed within five years of the

completed study — hardcopies by shredding and computer data by complete deletion — unless I

make prior arrangements with the participants to reuse their data.

Prior to commencing each participant interview, I asked for each participant's permission

to audio-record the interview. Once I was convinced that prospective participants understood the

benefits and risks of participating in the study, I began the interview.

During interviews, some participants can feel vulnerable (Panel on Research Ethics,

2022) due to a power imbalance between them and the researcher (Creswell, 2007). There was

no hierarchical relationship or influence of coercion between participants and me. I acknowledge

that my [disciplinary heritages](#) of RN, nurse educator, and doctoral student could have potentiated

a power imbalance – none was evident during all interviews. To counter this potential problem, I

used non-discriminatory language; introduced myself as a doctoral student, RN, and nurse educator; and acted as an active listener throughout each interview. I was a learner, not an expert; participants were the experts (Glesne, 2011). I remained acutely aware of actively listening to the participants' perspectives during all interviews. Nevertheless, I also needed to use probing questions to clarify my understanding and to acquire depth in the topic matter. I did inform each participant that they did not have to answer questions if they did not want to. Even so, every participant answered all questions. I continually appraised each participant's level of comfort and anxiety to ensure there was no harm. As an RN of 37 years, I am adept at assessing stress and distress in individuals – there was no indication of any harm in the voices and visuals of all participants. However, I sensed that one participant felt a bit uncomfortable sharing some of her thoughts and feelings about feeling unsafe when working in one rural facility – I paused the interview and asked if she was okay. Even so, there was no need to terminate the interview nor to provide her contact information for her Employer's Employee Assistance Resources, as she stated that she was okay and requested that we continue the interview.

Participants can feel abandoned when an interview ends (Creswell, 2007). I countered this potential issue by stating that I would be available to speak with them later about any matter related to the study if they felt the need. I also asked each participant if I could send them a follow-up email/telephone call or if they would be willing to participate in a re-interview – all agreed to these requests.

During interviews and data analysis, the researcher must use measures to ensure participants' privacy and confidentiality (Panel on Research Ethics, 2022). To conduct virtual interviews, I used my private computer and the MS Office 365 application with it set to anonymous to protect the online anonymity of the participants. Prior to commencing each interview, I asked each participant to choose a pseudonym and assured them that I would keep

their identity known only to me and as needed, my dissertation supervisor. One participant declined to provide a pseudonym preferring to use her own name. I informed all other participants that during data analysis and in any publications, their data would be aggregated with that of the other participants, and I would use their pseudonym to ensure that there was no identifying information that could link them to the findings.

For participants who chose to connect with me by telephone or online, I asked to connect away from where others could hear them or see their computer screen to ensure their privacy and confidentiality. One participant chose to use her computer at her place of work indicating that she had no concerns about others knowing about the interview. For telephone interviews, I used my iPhone, its speaker, and the Otter.ai application on my computer in my private home office to record the session. Otter.ai simultaneously converted the audio-recording to text. For online interviews, I used MS Teams in anonymous mode and with it synced to my Otter.ai application, which simultaneously converted the audio recording to text. After each interview (no matter its modality), I listened to the recording in its entirety while making corrections to the automated transcription; this activity took approximately three to four hours per interview. I then exported the interview as an MS Word document, saved it in my password protected MS OneDrive, followed by emailing it to the participant for member checking (a term I address in the Credibility Assurance section below). Once each interview transcript was returned to me via email post member checking, I de-identified it by labelling it with the participant's chosen pseudonym and removing any identifying information (i. e. names, places, and titles). I then deleted the identifiable version from my MS OneDrive. Next, I explain how I ensured the credibility of my study.

Credibility Assurances

Researchers conducting studies in an applied field such as nursing must consider both the

external standards for the methodology used, as well as the nature of the knowledge to which the methods will be applied (Thorne, 2016). Thus, the credibility of qualitative research within the health sciences extends beyond adherence to the methodological rules of conducting a study, to a more complex question of how that generated knowledge will be used in practice (Thorne, 2016). To enhance the credibility of my study, I used Thorne's quality considerations for analyzing data: evaluation criteria and factors to consider beyond evaluation. Moreover, I checked in with my dissertation supervisor seeking her input and recommendations once I had transcribed and coded the first two interviews, when I had generated some categories, when I required ethics modifications to my interview guide, after I had generated some themes, and when I had completed the final analysis.

Evaluation Criteria

In qualitative studies the researcher is an instrument, so the research is only considered as credible as the methods they use to conduct the study (Morse et al., 2002). Therefore, I constructed a research design for my study that included built-in mechanisms to realign errors before they could subvert the analysis (Morse et al., 2002), which ensured its methodological credibility. These mechanisms consisted of epistemological integrity, representative credibility, analytic logic, and an interpretive authority (Thorne, 2016).

Epistemological Integrity. Epistemological integrity, also known as methodological coherence, is a defensible line of reasoning that incorporates the assumptions made about the nature of knowledge and the methodological rules by which decisions about the research process are explained (Thorne, 2008, 2016). To ensure epistemological integrity, I maintained congruence between my philosophical assumptions; the research problem, aim, and question; the research question and methodology; and the research methodology and data collection and analysis methods (Morse et al., 2002). To do so, I began with articulating my precise research

aim stemming from my philosophical assumptions in the introduction, followed by threading it through the entire research design, and the conclusion (Oliver, 2014).

Representative Credibility. Representative credibility involves making theoretical claims consistent with the way phenomena are sampled (Thorne, 2008, 2016), which I ensured through using member checking, theoretical sampling techniques, and thinking theoretically.

Member checking allows the researcher to confirm with participants that the transcribed data from interviews accurately denotes their intent by providing them an opportunity to clarify or add information to their original ideas (Lincoln & Guba, 1985). For initial member checking, I emailed each participant a copy of their interview transcription and invited them to clarify their ideas, add or delete information, and to verify their intent in saying or sharing certain items.

I used theoretical sampling to re-interview one participant and to recruit one new participant to ensure there was maximal variation on phenomena central to the aim of the study (Thorne, 2016). I then conducted member checking with all participants to confirm my interpretations of their data (Lincoln & Guba, 1985) and the conceptual model I had generated, by asking them to review and provide feedback on the findings chapters I emailed to them. The five responses that I received were wholeheartedly in agreement with my interpretations of the data. I assume that the other eight also agreed to my interpretations of their data, as my request to them included that if they did not respond by a certain date, that they agreed with the findings.

Thinking theoretically involves the researcher using strategies to adopt or abandon the evolving themes (Morse et al., 2002). I used macro–micro perspectives (inching forward without making cognitive leaps, constantly checking, and rechecking the data) to build a solid foundation (Morse et al., 2002). I confirmed my emerging ideas with my original ideas through returning to the raw data and the ideas I had compiled in my research journal in the form of hardcopy diagrams, photographs, whiteboard images, and MS Word documents. This activity was ongoing

86

throughout the analysis process and ensured that new ideas were verified in already generated data. I also discussed my emerging ideas with two faculty peers and dissertation supervisor to ensure that they were appropriate and robust.

Interpretive Authority. Interpretive authority refers to revealing truths representative of participants' views external to a researcher's knowledge and biases (Thorne, 2008, 2016). My disciplinary heritages of rural RN and nurse educator could have potentiated bias because of my pre-existing knowledge about current challenges in staffing and educational activities in the rural hospital workplace. To counteract these potential biases, I entered in a reflexive journal my personal perspectives, prejudices, philosophical traditions, and how my *a priori* knowledge influenced the meanings I was generating during the analytic process. To effectively engage in these reflexive activities, I used Dahlberg and Dahlberg's (2019) act of bridling.

Bridling includes the actions of slowing down and reflecting on the process of understanding, so as not to understand phenomena too fast or too carelessly (Dahlberg & Dahlberg, 2019). Its purpose is to enable the researcher to be open to new possibilities, whilst not taking for granted what they see and understand (Dahlberg & Dahlberg, 2019). According to Dahlberg and Dahlberg, meaning keeps evolving because understanding is both a process that has already started and one that is never finished. Hence, generating meaning requires researchers to engage in a type of self-reflection that involves continuously investigating their own point of departure, presumptions, and presuppositions in relation to the phenomenon they are studying (Dahlberg & Dahlberg, 2019).

To engage in bridling during the entire analysis process, I exercised reflexivity by reflecting on my biases and presuppositions and asking interrogative questions about them relative to my interpretations of the data. These activities occurred during my daily walks in the fresh air, which were then followed by entering my thoughts into my MS Word research/

87

reflexive journal. My interrogative questions included "What is it that I understand? [and] Why is it that I understand it this way?" (Dahlberg & Dahlberg, 2019, p. 4). I exercised this reflexivity to ensure that my biases, presuppositions, and interpretations remained visible and challenged to me and my dissertation supervisor. In addition, I invited the participants to member check their transcription data, as well as the findings chapters to ensure that I was revealing knowledge representative of their views (Lincoln & Guba, 1985).

Analytic Logic. Analytic logic refers to transparency of reasoning and requires creating an audit trail that provides explicit evidence of the decisions made about the links between the data set and the analytic categories (Thorne, 2008). My audit trail consists of raw data that includes the transcribed interviews and notes and a separate research journal. One part of my research journal is in an MS Word document and includes the decision trail about the products of coding and analysis, products of reconstruction and synthesis, and memos of rationale for the decisions made. Other parts include numerous hardcopy diagrams and notes, as well as digital pictures of the conceptualizations I had generated on my whiteboard.

In addition, I maintained an active analytic stance by using Strauss and Corbin's (1998) inductive and iterative data generation technique in Creswell's (2007) zigzag fashion. This activity involved concurrently collecting and analyzing data to ensure there was a mutual interaction between what I knew and still needed to know. In this way I generated a stable schema based in the data, as well as traceable and defensible findings (Thorne, 2008, 2016). Next, I describe factors beyond evaluation criteria that I considered.

Factors Beyond Evaluation Criteria

When conducting a study within an applied discipline with practice implications, Thorne (2016) recommended that the researcher consider quality factors beyond the basic evaluation criteria that can potentially impact the larger disciplinary, social, and historical contexts within

which the findings are produced. My factors beyond evaluation included Thorne's moral

defensibility, disciplinary relevance, pragmatic obligation, and contextual awareness, as well as

Haraway's (1988) situated knowledges.

Moral Defensibility. The researcher needs to morally defend the study's purpose by

linking the findings to a potential benefit for practitioners, while minimizing potential harm for

the individuals within that practice domain (Thorne, 2016). The findings of my study supported

me in generating recommendations for rural stakeholders that can support them in generating and

implementing strategies to improve the just-in-time learning activities of RNs in the rural

hospital workplace, whilst causing no harm to the participants (see Ethical Considerations

section of this chapter).

Disciplinary Relevance. The researcher must ensure that the knowledge generated is

relevant for the discipline in which it is conducted (Thorne, 2016). The research I conducted was

about generating strategies to support rural RNs' continuing professional development as it

relates to just-in-time learning activities and is relevant to their day-to-day and specialty nursing

practices, as well as to their ability to confidently practice capably and safely.

Pragmatic Obligation. The researcher must consider the problems inherent to the

practicing sciences — how truth and opinion can become blurred (Thorne, 2016). The pragmatic

obligation is to the tension that exists between the uniqueness of multiple realities (idealist

epistemology) and the need for useable knowledge (Thorne, 2016). The researcher is obligated to

recognize that their findings may be applied in practice (Thorne, 2016) before they are

considered as probable truth (Thorne, 2016). In the nursing education literature, probable truth

refers to "…the best knowledge available until [researchers] are confronted with compelling

reasons to abandon it" (Thorne, 2016, p. 238). However, the term situated knowledges found in

feminist research philosophy (as opposed to probable truth) more appropriately describes the

understandings generated by researchers in the social world, as it reflects the values, politics, and contexts of the environment in which they are situated (Ali & Kelly, 2018; Haraway, 1988). According to Haraway, knowledge should be understood as situated and therefore a researcher's positionality means that the research conducted can never be fully objective. Nonetheless, this partial objectivity does not make it any less valid or useful (Haraway, 1988). Henceforth, I use the term situated knowledges as opposed to Thorne's (2016) probable truth, a term that has been used to seat nursing amongst healthcare professionals entrenched in the positivist paradigm. In my study, participants may have learned things about themselves during interviews, which they may have put into practice before I could reveal the findings as situated knowledges. Therefore, I ensured to inform each participant (in writing and verbally) that there was potential for them to use what they had learned during the interviews and member checking processes before the findings could be published as situated knowledges.

Contextual Awareness. In qualitative research the researcher's perspectives are bound by their historical context and disciplinary orientation (Thorne, 2016). Hence, the researcher must accept the probability that their perspectives are influenced by assumptions other than the ones they revealed prior to entering the study, are likely to be shared by others in the field or those being studied, and as such can be misconstrued as factual. To counter this problem, I used Thorne's recommendation to articulate the findings as contextual to time and place (in this case, the current rural hospital workplace in Alberta, Canada).

Situated Knowledges. As the findings are situated knowledges (as previously defined and described), I articulated my findings as meanings relative to the values, politics, and contexts of the rural hospital workplace. Next, I describe the data analysis techniques I used for my study.

Data Analysis Techniques

I used an inductive and iterative data analysis process, wherein data collection and data

analysis occurred simultaneously. I listed the demographic data (see Table 5), but also included it in my analysis to support my understanding of how demographics can influence rural RNs' engagement in just-in-time learning activities. For example, learning about participants' marital status was important to my analysis because it supported me in understanding if a participant's intent to leave the rural hospital workplace was influenced by their spouse or challenges experienced during their just-in-time learning activities in the rural hospital workplace. To manage the transcribed interview and note data, spider diagrams, and concept maps (Rivas, 2018), I used MS OneDrive and MS Word, which required a password to access. In addition, I used a whiteboard, markers, and hardcopy notes to create visual diagrams and concept maps (see Appendix M) in my private home office, of which I have a compilation of at least 40. To analyze the data, I used thematic content analysis, also known as thematic coding (Rivas, 2018), following Thorne's (2016) overarching steps for working and transforming data, building and writing findings, and interpreting meaning.

Working and Transforming Data

Interpretive description requires a researcher to find patterns among the pieces through seeing beyond the obvious, rigorously deconstructing what they think they see, testing hunches to fit data together in new ways, and taking ownership over the meaning and impact of the findings of a study (Thorne, 2016). To do so, "the researcher has to build a coherent and solid line of inductive reasoning through ideas that may be complex and contradictory and make defensible arguments as to the directional choices they have taken along the research path" (Thorne, 2016, p. 156). Building this kind of reasoning requires engaging in the cognitive processes of comprehending, synthesizing, theorizing, and recontextualizing (Morse, 1994).

Comprehending involves learning everything about the setting or the experiences of the participants (Morse, 1994). Synthesizing consists of merging various instances or events to

create typical or composite patterns in data (Morse, 1994). Theorizing requires developing best guesses about explanations through asking questions of data (Morse, 1994). Recontextualizing involves articulating what has been synthesized into a form applicable to other settings or contexts (Morse, 1994). Thorne (2016) contended that cognitive operations support the researcher in moving from mere exploration through to a final conceptual structure. To engage in that kind of thinking, I used Thorne's outline of recommendations for working and transforming data consisting of knowing my purpose, knowing my data, considering borrowed techniques, envisioning possibilities, and capturing analytic insights.

Knowing My Purpose. To stay on task, a researcher must remember their purpose for conducting the study in the first place and why anyone in that applied field would want to study the phenomenon (Thorne, 2016). The purpose of my study was to generate recommendations for rural hospital administrators, educators, managers, and policymakers that can support rural RNs to practice capably and safely during their just-in-time learning activities using blended educational resources. I kept this aim posted on my computer, in close sight, and in my research journal, to constantly remind me of it during the data analysis and writing processes.

Knowing My Data. Knowing one's data enables a researcher to move well beyond where they began their analytic venture while remembering the ultimate point of it all (Thorne, 2016). It requires dwelling in the data repeatedly and purposefully and developing a relationship with it (Thorne, 2016). The aim is for the researcher to conduct a series of technical and or intellectual operations that allow knowing or comprehending the data intimately and to use synthesizing, theorizing, and recontextualizing to consider the similarities and differences related to a wide range of dimensions among the various cases in the sample (Thorne, 2016). It involves making accurate records and allowing time to be immersed in these records to develop a sense of the whole beyond the initial impression of what is in these records (Thorne, 2016).

To begin knowing my data, I transcribed each audio-recorded interview and accompanying contextual note to text using the digital applications previously discussed. This activity involved listening to each recording in its entirety to correct the transcription while asking the question "What is going on here?" (Smith, 2014, p. 44) to gain an overall impression (Thorne, 2008, 2016) of each participant's just-in-time learning activities. Once I had transcribed the first two interviews, I began using borrowed techniques as outlined below.

Considering Borrowed Techniques. I followed data immersion techniques from Heidegger (Wilding & Whiteford, 2005), unitizing and categorizing coding techniques from Lincoln and Guba (1985), constant comparative data analysis techniques from Strauss and Corbin (1998), and memoing techniques from Lincoln and Guba and Strauss and Corbin. Below I address the first three of these techniques. In the Capturing Analytic Insights section of this chapter, I detail my memoing techniques.

Immersion Techniques. To create a mental space in which phenomena can be revealed during data analysis, Heidegger's Hermeneutic tenets recommend that the researcher embraces passivity, meditation, and reflection to understand what they see, hear, and read in data (Wilding & Whiteford, 2005). Creating this space requires sitting back, watching, and waiting — patience. Some of my best reflecting, synthesizing, and theorizing occurs when I walk in the fresh air with my canine friends, as it is a quiet time that allows me to slow my mind and think. Therefore, I went for daily walks to openly talk through my reflections and interpretations with myself during the data analysis process. I also engaged in conversations with my colleagues (nursing education and rural practice experts) and dissertation supervisor to support challenging my emerging ideas.

Unitizing and Categorizing Techniques. Units are bits of information (words, phrases, or sentences) that later serve as the basis for defining categories (Lincoln & Guba, 1985). Unitizing involves coding in a way that makes each bit of information comprehensible to others (Lincoln

& Guba, 1985). It typically includes a designation for the source of the information, the type of

respondent, the site, and the particular data collection episode. Categories consist of units that

appear to be related to the same content and can include a word, sentence, or quote (Lincoln &

Guba, 1985). Categorizing involves bringing units of similar content together into a provisional

category and assigning rules to describe the properties of that category (Lincoln & Guba, 1985).

These rules justify the inclusion of each unit in the category, rendering it internally consistent.

To begin unitizing data for each participant, I returned to the original line-by-line

transcription in my MS Word document and copied and pasted it into a unitizing table for that

participant in a separate MS Word Document (see Appendix N). This table included three

columns: one for the raw data entered as lines or chunks; a second for the participant's

pseudonym, date of interview, health care zone, date of the interview, and number of the

interview (i. e. first or second); and a third to enter my beginning thoughts about the concepts I

noted in each piece of data. If I found more than one concept for each entry, I included all ideas

in the column. Once I had completed these actions for the initial two interviews, I began

constantly comparing the data as described in the next section.

Constant Comparison Techniques. Constant comparison is the process of taking

information from data collection and comparing it to the data set (Creswell, 2007). I used the

zigzag (Creswell, 2007) method of moving between the activity of collecting data from

participant interviews and the coding methods of unitizing and categorizing data (Lincoln &

Guba, 1985). This process began with coding initial incidents (units) line by line (as described

previously) and comparing them to each other to make broad categories that I compiled in a third

MS Word document titled 'Categorizing Step 1" (see Appendix O). I labelled each category

using a propositional statement to assign meaning to it. As the analysis progressed and to capture

my progress, I saved 11 renditions of the categories I had generated. To organize my thoughts

about the codes within categories and to generate a visual representation of them, I drew spider diagrams on both hardcopy paper and on my whiteboard to group related codes (Rivas, 2018). I then compared categories to each other looking for similarities and differences.

To ensure homogeneity within each category and heterogeneity between categories, I used surfacing (identifying new categories because the logic of the situation demanded it), extension (inching from the unknown to the known), and bridging (establishing relationships between known but disconnected categories) to analyze relationships between categories (Lincoln & Guba, 1985). Some categories were subsumed by others and became sub-categories; others remained homogeneous with existent categories and were collapsed. I labelled missing, incomplete, or unsatisfactory categories as miscellaneous to be reviewed later. Once I had made sense of patterns between the categories and had generated several categories at graduating levels of abstraction, I used the process below to generate interconnected themes and subthemes.

Thematizing began after I had conducted nine interviews. To begin, I created a new MS Word document titled Thematizing Step 1 (see Appendix P), which included a table that consisted of two columns: one for themes and the other for capturing my thoughts. During this process, I asked questions of the data such as "What is this about?" (Morse, 2008, p. 727) thinking interpretively to develop best guesses of explanations about the data (Morse, 1994). I engaged in deep meditation and reflection (Wilding & Whiteford, 2005) to theorize about and recontextualize the data (Morse, 1994), illustrating my ideas on hardcopy paper (see Appendix M) and on a white board using concept maps (Rivas, 2018) and colored markers. This process involved searching for a meaningful 'essence' that ran through the data (Morse, 2008). I asked questions about the evolving themes such as "Why is it this? Why not something else? How does it fit or not fit?" (Smith, 2014, p. 47). I searched for repetition of themes and core themes. To capture my graduating levels of abstraction, I saved six renditions of my thematizing document.

In addition, I used an online Thesaurus to assist me with assigning dimensions to each theme.

Dimensions evolved as the analysis progressed to include degree of confidence, amount of time, patient acuity level, degree of learning, and level of support (see Appendix Q). Once I was satisfied with how the themes and subthemes were collated, I read and reread each interview transcript again line by line while comparing it to the themes and subthemes I had generated, while also interrogating the data with the questions I had used previously. Once I was satisfied with the repetition of themes, core themes had emerged, and the new information generated was far removed from the core of the existent themes (Lincoln & Guba, 1985), I terminated the analysis. The result was the collection of interconnected themes and subthemes based in the data and beyond the original theoretical platform. However, to reach this level of abstraction and find the story that belonged to the data required envisioning the possibilities (Thorne, 2016).

Envisioning Possibilities. In an interpretive description study, the overarching intellectual task driving data analysis is to make sense of which ideas are core to what is being studied and which ideas are better understood as context or belonging to another story (Thorne, 2016). This process involves confirming one's bases, expanding on associations, testing relationships, capitalizing on outliers, and engaging the critic.

Confirming one's bases requires the researcher to move from data to pattern and from pattern to relationship, while continually confirming or challenging the basis upon which the mind is making linkages between the pieces and parts in the data set (Thorne, 2016). I used Thorne's recommended questions of "What am I seeing? [and] Why am I seeing that?" (p. 174) to develop best guesses about explanations (Morse, 1994) and confirm my bases. Notably, Thorne cautioned against member checking (confirming the findings with participants), as this activity can skew the researcher's interpretations of the data. Rather, she advised expanding on associations to confirm one's analysis of the data. However, I had effectively used member

checking during my previous interpretive description study and saw the merit in using it to confirm my findings in this study, which I elaborate on in the Overinscription of Self and Misusing Metaphors sections of this chapter.

Expanding on associations is a process of returning to the source of the data or theoretical sampling to confirm, clarify, and elaborate on the essential relationships within the data set (Thorne, 2016). I returned to the original transcripts to confirm and expand upon the tentative associations I was making between aspects of the whole data set, confront my analytic questions, and challenge the direction of my thinking. I also interviewed a new participant to ask their thoughts about the conceptual framework I had generated and to expand on the information I had learned about the new CRN role in the rural hospital workplace. I then re-interviewed one participant so that they could elaborate on the CRN role they had previously spoken about. Next, I followed Thorne's methods to test the relationships among data.

To ensure the findings have relevance, Thorne (2016) advised researchers to step back from being immersed in the data to view the emerging analysis within the context of its larger purpose as a way of testing relationships among data. I used Thorne's questions of "How else might I understand this aspect of the data? [or] What might I be missing?" (p. 178) to question my ideas (Morse, 1994) and push the analysis further. I also took time away from the data to intellectually process my interpretations, which enabled capitalizing on outliers (Thorne, 2016).

Ensuring that the analysis has not ignored predictable or rare but relevant variation in the data set involves considering whether (or not) outliers exist (Thorne, 2016), I asked Thorne's question "What else might there be to see and how would I know that?" (p. 179). Admittedly, my mind was busy as I asked these questions, but my final run through the participants' transcripts helped me with openly questioning the data in relation to the themes and subthemes I had generated. Beyond questioning the data, I interrogated myself by engaging my internal critic.

Engaging the critic involves the researcher intentionally and forcefully critiquing their work to recognize and account for differing perspectives (Thorne, 2016). I believe that paradoxes exist in all situations and used this belief and continuums to question the categories and themes I was generating, in search of opposing perspectives in the data set. To capture these analytic insights and make them visible and challenged, I memoed them in my research journal.

Capturing Analytic Insights. Two ways for qualitative researchers to capture their analytic insights during data analysis include memoing in a research journal and creating and storing diagrams (Strauss & Corbin, 1998). A research journal is a storehouse of analytic ideas (memos) that the researcher can sort, order, reorder, and retrieve according to the evolving scheme (Strauss & Corbin, 1998). Memoing enables the researcher to reflect about and articulate their ideas to reveal incoherence and lack of logic in their evolving ideas, while also asking increasingly complex questions about the meanings being generated throughout the data analysis process (Strauss & Corbin, 1998). Creating diagrams helps the researcher to envision the evolving scheme (Strauss & Corbin, 1998).

For my research journal, I began by entering memos into a blank MS Word document and diagrams into a hardcopy journal. My initial memos appeared somewhat awkward and simple (Strauss & Corbin, 1998). Each time I worked with the data in my MS Word journal, I saved a copy of that work to refer to my thoughts in earlier documents. As the analysis progressed, I added more memos to my journal. These memos were more orderly, progressive, systematic, and easily retrievable, and enabled me to use my creativity and imagination to generate ideas that stimulated new ideas (Strauss & Corbin, 1998). I included highlighted memos to inspire my thinking about the emerging categories and themes and to create a decision trail. My memos helped me uncover the properties of each category, generate rules for assigning units to categories, and replace tacit judgments with propositional rule-guided judgments (Lincoln &

Guba, 1985). They also assisted me with asking increasingly complex and skeptical questions of the data such as "Why is this here? Why not something else? [and] What does it mean?" (Thorne et al., 2004, p. 7). To begin, my memos were documented every week and as the analysis progressed and thematizing began, I memoed every one to two days. It takes time for me to process my thoughts, so I allowed ample time between my analytic entries to support clearly articulating my emerging ideas. New memos replaced earlier memos as the analysis evolved and my conceptual linkages broadened. Capturing these analytic insights generated data collection pathways that were challenged, rather than reinforced by my earlier preconceived ideas, thereby supporting me in building and writing findings as expressed by participants.

Building and Writing Findings

The findings of interpretive description studies reflect something new about a phenomenon that was not understood prior to conducting the study (Thorne, 2016). To ensure that the written report denotes something new, the researcher sets their sights on an outcome, tests their analytic options, and conceptualizes their findings (Thorne, 2016).

Setting My Sights. According to Sandelowski and Barroso (2003), qualitative findings can be presented from least to most abstract in the following four ways: As a topical survey (an inventory or description of the topics studied), thematic summary (either a simple report drawn from predetermined themes or a rich, nuanced report based on strong inductive reasoning), conceptual or thematic description (a report of thematic patterns based on concepts exported from external sources or developed in situ from data), or interpretive explanation (a report that contains whole new conceptualizations of a phenomenon using thematic linkages that present it in a new way). I generated a thematic description to meaningfully present recommendations for rural stakeholders to generate strategies to support the just-in-time learning activities of rural RNs using blended educational resources. In turn, these strategies may support rural RNs' ability

to practice capably and safely. Addressing these outcomes required testing my analytic options.

Testing My Analytic Options. Thorne (2016) used an analogy of building blocks to describe how a researcher should test their analytic options through experimenting with data using inductive processes. She recommended using questions such as "What happens if I group what I have in this way versus this other? [or] In what way are these groupings different, and why would that matter?" (p. 187). As I wrote the findings chapter, I moved back and forth between my table of data and documents in my research journal, whilst using a whiteboard and markers, and hardcopy spider diagrams to reconfigure groupings of information. These activities enabled me to construct and test different groupings of the evolving themes to reach an organizing structure that was a conceptualization of my findings.

Conceptualizing My Findings. A good piece of interpretive description consists of a sound report and a mental heuristic (Thorne et al., 1997; Thorne et al., 2004) that powerfully capture the important elements within the phenomenon in a way that can be readily understood and used in the applied practice context (Thorne, 2016). Writing the findings took me a significant amount of time (over eight months) because I engaged in Heidegger's tenets (Wilding & Whiteford, 2005) to ensure that I had carefully embraced and reflected on the evolving themes. I knew from previous experience that typing was a good way to stimulate my thinking and ability to conceptualize ideas. Thus, I concurrently wrote the findings chapter while generating themes and subthemes. I also ensured that I avoided the following predictable hazards and potential problems that Thorne emphasized can derail a study's credibility.

Avoiding Predictable Hazards and Potential Problems. Predictable hazards include premature closure, misinterpreting frequency, and overinscription of self. Potential problems can include misusing metaphor, descriptive or analytic excess, and conceptual confusion.

Premature Closure. The action of making unfounded inferential leaps during data

analysis can result in premature closure and a significant threat to generating meaningful

findings (Thorne, 2016). One cause of premature closure is the researcher stopping at the first

major 'aha' moment to make inferential leaps about the data (Thorne, 2016). Another cause is

the overdetermination of pattern, whereby the researcher makes artificial coherence between data

pieces and patterns. To prevent premature closure, I followed Thorne's recommendation to begin

the analysis with a very broad, generic coding scheme, which enabled me to shift the data around

until I had a better picture of the whole. In addition, I critically reflected on and theorized about

all possible solutions when making patterns and building relationships between and within the

data by asking questions of the data, as outlined throughout this data analysis section.

Misinterpreting Frequency. The actions of over or underemphasizing frequency of data

are referred to as misinterpreting frequency (Thorne, 2016). This error can occur when things

seen frequently within a data set are misconstrued as more relevant than those that are rare, or if

something not seen in the data set is assumed to not exist (Thorne, 2016). Conversely,

interpreting a graphic instance as happening often may reflect an unconscious attempt of the

researcher to ensure the findings extend beyond what was previously known about the

phenomenon (Thorne, 2016). To counter these pitfalls, I followed Thorne's advice to honestly

interrogate myself about my interpretations. Hence, I discussed the findings with practice

experts, faculty peers, and my dissertation supervisor to learn how my interpretations aligned

with their insights; conducted theoretical sampling to search for anomalies and to validate the

findings; sent the findings chapter to the participants to confirm the authenticity of my findings;

and returned to the literature to compare it with my findings. These activities ensured that my

articulation of the findings was nuanced appropriately to my degree of certainty about them.

Overinscription of Self. Featuring oneself as an important part of the story, as opposed

to highlighting the story of the participants, is referred to as overinscription of self (Thorne,

2016). To prevent this hazard, which can discredit the findings, Thorne recommended that researchers frequently step back and create distance from the analytic process to challenge their intellectual linkages. I engaged in Heidegger's Hermeneutic tenets (Wilding & Whiteford, 2005), exercised reflexivity using bridling (Dahlberg & Dahlberg, 2019), and conducted member checking (Lincoln & Guba, 1985) to ensure that the findings were as expressed by participants.

Misusing Metaphors. Inappropriately assigning metaphors to ideas in the findings can do injustice to a complex phenomenon (Thorne, 2016). Metaphors are used to make things cohere by linking parts to a whole (Sandelowski, 1998) and their misuse detracts from that aim (Thorne, 2016). Misusing metaphors was not an issue in this study as I did not assign them to my ideas in the findings; however, I did include participants' metaphors in their narratives.

Descriptive or Analytic Excess. Descriptive or analytic excess can weaken the quality of the findings in a qualitative study (Lofland & Lofland, 1995). Descriptive excess constitutes thin rather than thick description and results in clumping of data, from which the reader is expected to draw their own conclusions (Wolcott, 1994). Analytic excess results in too little description to support interpretations, so the analytic process, as opposed to the description, becomes the primary focus of the report (Thorne, 2016). I avoided these issues through ensuring that connections between processes, themes, categories, and dimensions, as well as how these connections contributed to the greater whole, were evident in my writing. In addition, the findings were reviewed by two faculty peers and my dissertation supervisor to ensure that the descriptions were thick and rich.

Conceptual Confusion. When literature is intermingled in the presentation of the findings there is potential for the researcher to change the conceptualizations in their findings to align with those in the literature, which causes conceptual confusion (Thorne, 2016). I avoided that issue by writing the findings and discussion chapters independently as two distinct

102

intellectual operations (other than the participants' recommendations for rural stakeholders, which I included in the discussion chapter). Consequently, my findings chapters incorporate the six inextricably linked themes and subthemes of *It Varies!* stemming from my data analysis. My discussion chapter encapsulates my interpretations of the meanings of the findings relevant to the existing literature, as well as participants' and my recommendations for rural stakeholders.

Interpreting Meaning – Final Analysis

The final analysis of a study requires thoughtful examination, reflection, and reinterpretation of the findings within the context of what else is known about the phenomenon (Thorne, 2016). This process involves discussing the findings within the context of other literature, drawing conclusions based on these comparisons, and considering what implications (if any) might be derived from the conclusions.

To begin, the researcher identifies priorities or prominent elements in the findings that can be solidly placed within the context of what is already 'known' about the phenomenon (Thorne, 2016). In a qualitative study, these priorities are typically the overarching themes. Next, the researcher interprets these themes considering the literature. Interpretation of the meanings of my findings constitute Chapter 6 of my dissertation. To write this chapter, I followed Thorne's recommendation to revisit the original sources in my literature review to expand upon, refine, or deepen meaning about the phenomenon of rural RNs' just-in-time learning activities using blended educational resources. I then searched in the AU aggregator databases and Google Scholar for any new literature about the phenomenon in search of different angles of vision to reflect on the potential meaning and impact of the ideas on my findings. These activities enabled me to create and articulate interpretations of the data that extended beyond the study's initial theoretical platform (Thorne, 2008, 2016), whilst seating them in the current literature (Oliver, 2014). During this process, I included explanations and interpretations that shed light on the

social, cultural, structural, and historical influences that have shaped the context and behaviours (Thorne, 2016) of rural RNs as they relate to their just-in-time learning activities.

To identify the 'so what' of the study (Thorne, 2016), I ensured to highlight its significance while noting that "the conclusions are a product of the study findings [which have been] interpreted in the context of the available literature" (Thorne, 2016, p. 225). In addition, I identified the strengths and limitations of the study approach, as well as the implications for the rural nursing practice environment. To inform the practices of rural RNs, I explicitly stated what the new study has contributed to the field of education and the profession of rural nursing, as well as generated recommendations (including those of the participants) that can be used to influence policy, organizational, and educational initiatives aimed at the just-in-time learning activities of RNs using blended educational resources in the rural hospital workplace. Finally, I made suggestions for future research identifying how other research designs might afford better angles of vision on some of the topic matter.

Timelines of the Study

It has taken me nearly a year to conduct, write, and report this study. To stay focused, I generated a flow chart of timelines and milestones (see Figure 8) using Krathwohl and Smith's (2005) template for depicting them. Time challenges during the study included the following: finding organizations willing to facilitate participant recruitment; turn around times with participants for member checking; and turn around times for obtaining constructive feedback from faculty peers, my dissertation supervisor, and committee members. Although not a challenge, spending time in the data took longer than I had anticipated; nearly nine months as opposed to six. Nonetheless, this significant amount of time enabled me to become intimate with the data and confident in the findings I have generated.

Figure 8

Timelines of the Study

2 AU Ethics App Submission – 06/17/22 RDP Ethics App Submission – 07/21/22	**17** Contact CRNA 7/26/22 – 8/12/22

13 (1 + 1 + 1) Emailed AAN, UNA, RhPAP 8/16/22; 8/24/22; 8/29/22

1 AU/RDP Modified Event Ethics Submission 9/1/22

33 + 2 AU Ethics Approval – 7 /20/22 RDP Ethics Approval 7/22/22

8 Got Approval 8/23/22 – 8 /31/22

1 + 1 AU/RDP Modified Ethics Approval 9/1/22; 8/31/22

1 Emailed Shortened Letter of Information for Participants to AAN, UNA, RhPAP 9/2/22

14 Set Up First 2 Interviews 9/1/22 – 9/15/22

14 Conducted First 2 Interviews 9/30/22 – 10/13/23

1 + 1 Transcribed First 2 Interviews 9/13/22 + 9/14/22

5 Analyzed First 2 Interviews 9/18/22 – 9/23/22

Number = Day
Curved box = milestone
Double line = Critical path

14 Conducted Member Checking 9/18/22 – 10/2/22

14 Discussed with Supervisor 9/26/22

62 Conducted Rest of Convenience Sample Interviews 10/14/22 – 12/15/22

62 Transcribed Interviews 10/15/22 –12/16/22

85 Continued Initial Data Analysis 9/7/22 – 1/1/23

120 Continued Data Analysis 1/1/23 – 4/30/23

75 Conducted Member Checking 10/17/22 – 1/1/23

1 Discussed Initial Themes with Supervisor 1/30/23

117 Wrote Initial Findings 1/3/23 – 4/30/23

30 Conducted Theoretical Sampling 4/20/23 – 5/20/23

30 Returned to Literature 5/16/23 – 6/15/23

30 Wrote Discussion Chapter 5/16/23 – 6/15/23

1 Sent Findings Chapter to Supervisor 5/16/23

14 Theoretical Sample Member Checking 4/25/23 – 5/9/23

10 Member Checking of Findings 6/4/23 – 6/14/23

35 Document to Supervisor/Committee Members 6/16/23 – 7/21/23

7 Prepared Final Report 7/21/23 – 7/28/23

45 Submitted Final Report to Supervisor and Committee – Prepared for Defence 7/28/23 – 9/11/23

1 Oral Defence – Pass 9/11/23

105

Chapter Summary

In this chapter, I described and justified the use of a constructivist interpretive description research approach to explore the just-in-time learning activities of rural RNs using blended educational resources in the rural hospital workplace. This design enabled me to use the theoretical underpinnings of heutagogical and appreciative inquiry theories to generate strengths-based research questions to reveal participants' perceptions of what has been working well to support their just-in-time learning activities in their respective rural hospital workplaces. In addition, interpreting participants' perceptions using the frameworks of established informal learning theorists has enabled me to delve into the intrinsic cognitive processes and learning actions that participants used to engage in their just-in-time learning activities. Next, I provided evidence of the study design, comprehensively detailed how data were collected and analyzed, as well as how I attended to ethical considerations and credibility assurances during the study. Finally, I provided a figure depicting the timelines of my study. In the next two chapters (4 and 5), I present the findings of my study as a thematic description. Chapter 4 attends to the context of the study and Chapter 5 encompasses the just-in-time learning actions participants engaged in to support practicing capably and safely.

Chapter 4. Findings – It Varies! The Context

My purpose in this study was to generate substantial recommendations for rural stakeholders to assist them with creating strategies to improve RNs' just-in-time learning activities in the rural hospital workplace. To fulfill this purpose, I used an interpretive description research methodology to explore the extent to which blended educational resources support the just-in-time learning activities of RNs in the rural hospital workplace. I interviewed 13 RNs from across Alberta, Canada who work/ed in the rural hospital workplace to understand their perceptions of this phenomenon. The findings from their data emerged as a thematic description titled *It Varies! Blended Educational Support for Rural Registered Nurses' Just-In-Time Learning Activities* (see Figure 9), which from herein I will refer to as *It Varies!* This thematic description consists of six inextricably linked themes: *My Role*, *My Level of Expertise*, *What is the Situation? What Do I Need to Learn? Who/What are My Go-To Resources?* and *What Are My Learning Actions?* In addition, a seventh theme *Who/What Could Make It Better* encompasses participants' recommendations for rural stakeholders to serve as a launch pad for creating and implementing strategies to improve the just-in-time learning activities of rural RNs.

In this chapter I discuss the first four themes of *It Varies! My Role, My Level of Expertise, What is the Situation?* and *What Do I Need to Learn?* These themes and their linked subthemes encompass the context of the study. The first theme highlights the differing RN roles within the rural hospital workplace (generalist versus non-generalist). The second captures the levels of expertise of the RNs who participated in this study (ranging from advanced beginner to expert) founded on Benner's (1982) novice to expert model. The third addresses the contextual situations participants have encountered within their rural hospital workplaces (ranging from simple to chaotic) based on Snowden and Boone's (2007) cynefin framework. The fourth points to new and review information that has triggered participants' just-in-time learning activities.

Figure 9
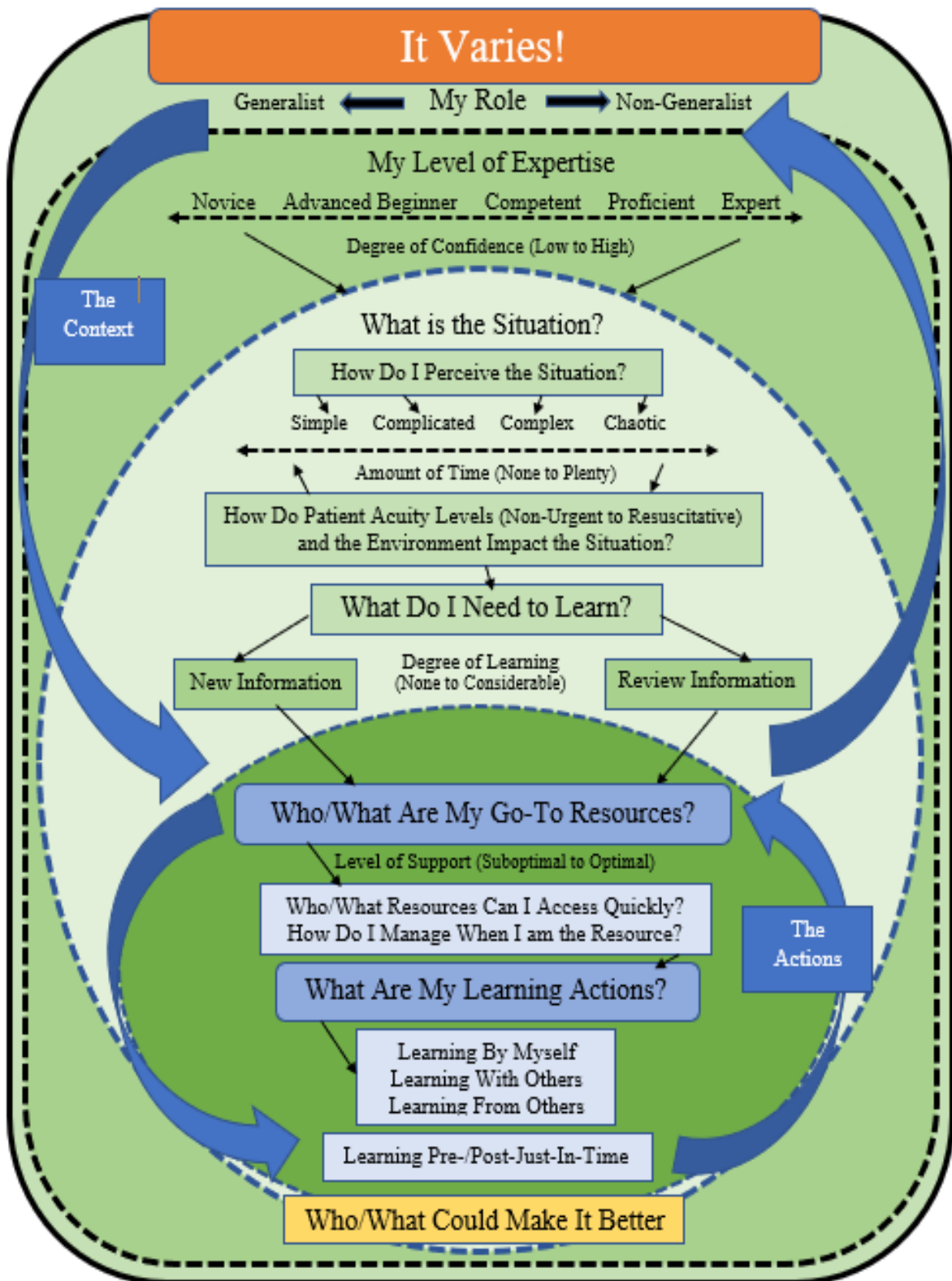
It Varies! Blended Educational Support for Rural Registered Nurses' Just-In-Time Learning Activities

To begin, I present the context of rural RNs' just-in-time learning activities as it relates to the RN role in the rural hospital workplace (generalist versus non-generalist). Participants' perceptions of the extent to which blended educational resources have supported their just-in-time learning activities to enact their RN role capably and safely varied. Of note is that, to protect participants' privacy and anonymity (particularly the lone male participant), I use gender neutral and female pseudonyms (chosen by participants) and she/her pronouns throughout the rest of this paper.

Theme 1: My Role (Generalist versus Non-Generalist)

To obtain good variation in my participant sample, I recruited 13 RNs from across all five AHS zones and two hospitals in CH who work/ed in one or more rural hospital workplace/s. Some participants work/ed in more than one AHS zone or in both an AHS and CH rural hospital. Nine participants practiced as generalists and four as non-generalists within 12 different rural hospital workplaces. Factors influencing their just-in-time learning activities in their respective workplaces included types of services provided; if they had timely access to online educational resources or adequate continuing education opportunities; and whether human resources such as physicians, pharmacists, and CNEs were located on-site (see Table 6). In addition, I discuss participants' intentions to stay or leave the rural hospital workplace.

Types of Services

In four of the hospitals in this study, the types of services offered consisted of a mix of medical, mental health, palliative, awaiting placement, obstetrical, and occasionally pediatric care; emergency care including outpatient procedures, and surgical care consisting of mostly elective day surgery procedures, but also emergency surgeries and endoscopy procedures. Only two of the four participants who work/ed in this type of facility had maintained a generalist practice working in most areas; the other three had been expected to mostly work in one area.

109

Table 6

The Context of the Rural Hospital Workplace

Rural Hospital Workplace	Hospital Zone/ Health Authority	Types of Services	Timely Access to Online Educational Resources	Access to Continuing Education	Physician On-site 24/7	Pharmacist On-site	Clinical Nurse Educator On-Site
1	AHS Central	AC/ER	Yes	Adequate	No	Yes	No
2	AHS North	AC/OBS/ER mix SDC/OR/PARR	No	Sub-Optimal	No	Yes	No
3	AHS Central	AC/OBS/ER mix	No	Adequate	No	Yes	No
4	AHS Edmonton	AC/ER	Yes	Sub-Optimal	Yes	Yes	Yes
5	CH	AC/OBS/ER mix OR/PARR	Yes	Adequate	No	Yes	Yes
6	AHS Central	AC/ER	No	Sub-Optimal	No	Yes	No
7	AHS Edmonton	AC/ER	Yes	Adequate	No	Yes	Yes
8	AHS South	AC/OBS/ER sep	Yes	Optimal	No	Yes	Yes
9	AHS South	AC/ER	No	Sub-Optimal	No	Yes	No
10	AHS Calgary	AC/OBS/ER mix SDC/OR/PARR	Yes	Adequate	No	Yes	Yes
11	AHS South	AC/OBS/ER sep SDC/OR/PARR	Yes	Optimal	No	Yes	Yes
12	CH	AC/ER	Yes	Optimal	No	Yes	Yes

Note. Type of Services: AC/ER mix of medical, mental health, palliative, awaiting placement, rarely pediatric patients on one unit/ER a separate unit; AC/OBS/ER mix = mix of medical, mental health, palliative, awaiting placement, obstetrical, surgical, rarely pediatric patients/ER a separate unit; AC/OBS/ER sep = acute care, obstetrical, emergency patients on separate units; SDC/OR/PARR = surgical day care/operating room/post-anesthetic recovery room.

As previously addressed in Roles and Responsibilities of Rural Registered Nurses, the

role of the generalist RN in the facility described in the previous paragraph is complex and

diverse, requiring breadth of knowledge and skills to capably and safely provide care for a mix of patients ranging from newborn to elderly (CARRN, 2020; MacLeod, 1999; MacLeod, Kulig et al., 2019; Scharff, 2013; Smith & Vandall-Walker, 2017). Ashley claimed that enacting this type of generalist role requires being *it*, as imparted next:

> *…the lack of that wound care team, that…IV [intravenous] team to just…solve your problems for you. …you have to solve the problem, you're it. If you have a pediatric code…you don't go…'we're not a pediatric hospital, you have to go…down the street.' You're it! You are the only one who is going to help this individual address their health needs in-the-moment.*

Moreover, the diversity of this type of generalist role often requires providing patient care whilst attending to the roles of other staff, disciplines, and professions in the rural hospital workplace. Choco stated that in emergency situations, the rural generalist RN takes on some of the functions of an *anesthetist* or *respirologist*. Shelly described how taking on other roles has made just-in-time learning activities *challenging* because of needing to simultaneously multitask a variety of roles. She conveyed: *…you're basically being a staffing clerk while you're… managing the unit. They impact everything that you're doing…because your mind is having to attend to a variety of things, not just…the task at hand.*

Conversely, two participants who work in similar generalist hospitals were hired as non-generalists. The expectations of their role differed significantly from those of the generalist. Ric explained her charge role on the medical unit during a busy shift this way: *…I would end up… overlooking all…situations but never having to play a role in each individual scenario. I… relay[ed] what [was] going on around the entire hospital to…staff members to make sure that they [were] going to the appropriate places and that people [were] getting adequate support when needed.* Furthermore, RNs in the generalist facility in which Chantal works have been

111

supported by their manager to choose whether they want to work in *just one department*. She

contended: *Some [RNs]…have…training in both [acute care and ED], but they…don't have to*

commit to one or the other. …When I applied…I talked so much about…how…I love emergency

medicine…so [my manager] put me in emerg [emergency]. …I've never worked [on the medical

unit], and she's been okay with that.

However, Chantal also admitted that, on rare occasions, she has assisted in labor and

delivery (L&D) for precipitous (fast) deliveries when the physician was off-site. Typically, the

need to assist with these emergent situations has been perpetuated by low staffing numbers. She

conveyed it this way: *I…help in L&D because there's only two RNs in the building. So, if we do*

have a precipitous labor and our doctor's not there, I will go…and help. She acknowledged that

she has also assisted in the OR, an area she is familiar with in a different rural hospital

workplace: *…in the OR…we do lots of C- sections [caesarean sections]; that I'm used to!*

The services of six other generalist hospitals in this study included acute care and

emergency care, but not obstetrical or surgical care. Five participants who worked in this model

of hospital practiced as generalists, while one predominantly worked the ER and occasionally

assisted in acute care. Tess who worked mostly in ER explained the expectations of her role: *I do*

just ER, but we do support the unit sometimes because they have…a…monitored unit. …It's not

an expectation [that staff work in both areas], but…probably about 50%...do a little bit of both.

Choco deemed that her generalist role in the facility in which she works requires

quickly switching from working in one area of the rural hospital workplace and promptly

delegating her workload responsibilities to someone else so that she can assist with emergent

situations. She described these expectations:

So, the other day I was working on acute care, which was full, and I was the…float and

STARS [Shock, Trauma, Air, Rescue Service] was called because we were getting an ambulance

112

with a 15-year-old [emergent patient]. ...I also was charge...so I had to quickly give up my

patients..., call the manager because there wasn't enough staff if I left the floor; it would have

been unsafe...I had to delegate all my responsibilities...quickly.

Daisy identified her rural generalist role during night shift in the ER as *you're it* and

lacking supports. She pointed out that their physician is typically off-site and on call, leaving the

RN as the primary point of care for patients entering the ER. In addition, she expressed concern

about the few staff available to support emergency situations: *...you have nothing for support out*

here. You're it! ...on a night shift in emerg there is one RN.... So, if they need help, they're

calling the nurses of which there are three on acute care and one on long-term care. ...no

doctor's...there. You...call...and they've gotta come in.

Mel highlighted that *rural [nursing] is challenging, it's not for everybody.* She

contended that urban nurses at courses she had attended were generally unaware of the

autonomous practice of rural RNs and the expectation to work alone in the ER with a physician

who is off-site. She communicated this lack of understanding about rural nursing next:

...it's an eye opener for some [urban] people when...we go through a scenario

and...they say, 'oh, well, I'd call Gen Surg [general surgery], or...I'd call the RT [Respiratory

Therapist]' and...we say 'well, we would call RAAPID [Referral, Access, Advice, Placement,

Information, and Destination] and we [would] love to have the patient transferred and we would

try to do this...' and they're like, 'you don't have any of that?' and I say 'no, I'm by...myself on a

night shift, I don't even have a unit clerk. It's just me and the doctor.'

Notably, in two hospitals in this study, the services were provided on separate units for

acute care, obstetrics, emergency, and surgery. One participant who worked in this urban-type

facility maintained a generalist practice working in most areas, while the other practiced as a

non-generalist in acute care. Mickey listed her generalist role as follows: *I work in the*

OR…recovery…labor, delivery…postpartum, and…ER. I have worked on our…inpatient unit, which is…like acute care, but a lot of long-term care awaiting placement [patients]. …our night shifts there's only…two nurses in the ER, two…on maternity, and so… you need those people [from the unit] when it's crazy. Tina described the differing role of the non-generalist RNs in the medical unit in which she works as follows: *…the way we're set up is we split the unit…into two and then within the two it's…split again. …But then within that…if somebody said 'hey, I need help moving my patient…even if they're not on your part, they'll still help.'*

Timely Access to Online Resources

Participants' timely access to evidence-based online resources has been impacted by four factors: whether Connect Care was implemented within the facility, wireless fidelity (Wi-Fi) was adequate, computers were accessible, and processor speed of the available computers was quick enough. Participants working in rural hospitals in AHS Edmonton and Calgary zones perceived their access to online resources as adequate to optimal; they all had access to Connect Care and adequate Wi-Fi, and there were ample, fast processing computers. In contrast, participants working in rural hospitals in AHS north, central, and south zones lamented that accessing online resources was exceedingly difficult due to one or more of the following challenges: difficulty navigating AHS Insite, poor Wi-Fi, lack of computers, or slow processing computers. I elaborate on participants' perceptions of the varying supports for accessing evidence-based online resources in the Chapter 5 subtheme *Online Resources.* Nonetheless, I include Jane's description of Wi-Fi inadequacy here as it has drastically impacted her ability to perform some emergency procedures needed to practice capably and safely. She lamented: *…if we have somebody who's in room XXX at the end of the hallway, if they're having chest…pain and need an ECG [electrocardiogram], we have to move the patient closer to the nurse's station where the Internet signal's better.*

114

Adequate Access to Continuing Education

Eleven participants were educated at the BScN or BN level, two at the diploma level, and all had engaged in some form of continuing education. For rural RNs, continuing education is generally provided by a CNE. However, in this study, a CNE was consistently on-site in only five facilities. Participants in the other facilities had either never met the CNE or seldom saw the CNE. Only four participants perceived that their CNE was actively present when they required assistance with their just-in-time learning activities. Choco explained the availability of an on-site CNE: *I knew the educator was in [the building] and I said 'I need you stat in emerg'…she came down.* I address CNE support in the Chapter 5 theme *Who/What Are My Go-To Resources?* and Chapter 6 discussion *Who/What Could Make It Better*.

To comprehend the staffing of CNEs across the province, I asked upper management in both AHS and CH authorities about the CNE staffing ratios across the various rural hospitals. The response from AHS was that the availability of CNEs to staff in rural hospitals *is stark* (confidential personal communication, April 23, 2023). Nonetheless, after three months I still have not received the relevant statistics from both AHS and CH regarding the number of CNEs allocated to rural hospitals.

A new finding in this study was that two participants had access or previously had access to a clinical resource nurse (CRN). A CRN is someone who works alongside the staff on-site providing optimal informal learning support in-the-moment. Tess described the CRN role: *…the clinical support nurse is…hands on during actual shifts…to help in higher needs situations [to] support staff…if they're uncomfortable doing a skill or…an assessment on a patient. …they're…always present and they…don't…take on an assignment…they…help everybody.* Evident from the conversations with four participants, this role aligns with a portion of what their CNEs had been doing. However, it differs from the role of CNEs who are generally off-site and

responsible for more than one hospital. Tess made clear the latter CNE role: *…clinical nurse educators are really good at doing the ongoing…required learning and… putting on courses [and]…sessions to…teach…new material and…the initial hands-on learning. The…CNEs… rarely are, hands-on in the department when an acute situation is happening.*

Other Human Resources On- or Off-Site

Other on- or off-site human resources included pharmacists and physicians. Although not a question I specifically asked participants, all 13 identified working in facilities in which the pharmacist was typically on-site during the day shift Monday through Friday. Only one participant indicated having access to an on-site physician 24/7; the others noted that physicians were generally on-site during day shifts, sometimes during evening shifts, and mostly on call and off-site over night shifts. I include participants' perceptions of how these factors influenced their just-in-time learning activities in the Chapter 5 theme *Who/What Are My Go-To Resources?*

Orientation Support

When newly hired to the rural hospital workplace, three participants indicated that they were not provided adequate orientation to the facility. Shelly identified that she was only provided *two or three buddy shifts* and no orientation to the equipment, which left her *trying to scramble to find [a needed] resource.* In a different rural hospital workplace, novice or advanced beginner RNs have not consistently been paired with experienced RNs in the ER. Mel stated her concern: *In the past, they have staffed novice nurses in emergency by themselves…so…that's improper staffing, in my opinion. You know, making sure that we…have…an experienced nurse with a novice nurse at the very least.* Likewise, when Tina was a new hire, she was expected to assist in the ER without adequate orientation for working in the ER. She explained: *…my training…was they had an initial…thing you could work through yourself. And then beyond that, it was the orientation buddy shifts, and then you were good to go. I don't know if…it was*

enough. …I guess not because I'm not there anymore.

Intent to Stay or Leave

Nine participants had every intention of staying in their current rural hospital workplace, one had already returned to urban, one had switched rural hospitals, and two planned on moving to urban soon. Tina left her initial rural hospital workplace and went to work in a different rural hospital in which she reported better educational support and the ability to work on a single unit. She expressed feeling unsafe in her role in the first site due to lack of orientation and educational support: …*the actual training for emerg [emergency]…, is…very minimal. …it was very course basic. At the time you didn't…require [the Advanced Cardiac Life Support] course. So that was…part of why I didn't feel…safe practicing.*

The two participants who intended on leaving their rural hospital workplaces were doing so to access further education. Nonetheless, they both planned to eventually return to rural nursing. Chantal, who had been raised rurally and liked the challenges and autonomy of rural nursing wanted to pursue a *STARS* career. She expressed: …*I grew up [in a] small town. …I really like the autonomy and…how far I've been pushed to learn. I…really want to advance my practice, end goal is to be…a STARS nurse. …I know that I have to sacrifice rural nursing for a…bit, but I…will come back to it.*

Ric, who also intended to leave and eventually return to the rural hospital workplace, lamented that she found it exceedingly challenging to access continuing education in the rural facility in which she works. She contended:

I've been trying to get trained for either maternity or emerg. …I think the educators and management…want to make sure that the staff are…gonna stay…if they're going to train them. …I haven't even gotten NRP [Neonatal Resuscitation Provider] and that's so crucial in a site like XXX. …I…got so desperate…where it's like, 'okay…I'll go find a course in the city to do it.'

117

The following excerpts include a variety of reasons why individuals intended to stay in the rural hospital workplace. Mickey was surprised by how she fell in love with rural nursing as indicated subsequently: *I love rural nursing more than I ever thought I would…I thought maybe once my kids graduated; I would go back to the city. But there's no way…I will stay probably until we retire.* Ashley contended that what has kept her in rural is the *autonomy* and *independence* of rural nursing, which requires *problem solving*, being *it*, and effectively addressing patients' health needs no matter the situation or type of patient.

Mel acknowledged that she had been raised rurally, had always worked rurally, and stayed in rural because of its diversity. She described it as *[being] a jack-of-all trades. You know a little bit about everything.* In addition, Mel admitted to liking *the close knit, feel of rural* and its semblance to family within and outside of the hospital: *…it feels like…a family…you know everybody on a personal level, and you feel close to your colleagues, not just your nursing colleagues, but like the maintenance people and the housekeepers and all of that. …we know lots of the patients too…you get to know the community as well.*

In contrast, Daisy has remained working in the rural setting because she is a *country girl at heart*, not because of the type of work, admitting that she would gladly take back her nursing job in urban and its numerous resources. She expressed: *…I grew up in the city, but I don't think I was ever meant to stay there. We love the country; we'd never go back. …I would even go back to full time…if I could have my old job back because you're…supported.* Next, I address the context of participants' levels of expertise.

Theme 2: My Level of Expertise

Each participant's perception of the extent to which blended educational resources in their workplace have supported their just-in-time learning activities was influenced by contextual factors (see Table 7) that contributed to their level of expertise. At the beginning of each

interview, I collected the following demographic data: age, gender, culture/race, marital status,

number of children, level of nursing education, previous urban RN experience, years working in

the rural hospital workplace, employment full-time equivalencies (FTEs), and areas worked.

Table 7

Participant Demographic Information

Participant Number	Age Range	Previous Urban Experience	Years Working in Rural as an RN	FTE	Areas Worked	Intent to Stay
1	40-49	Yes	12	1	AC/ER	Yes
2	30-39	Yes	9	cas	AC occ ER	Yes
3	60-69	No	31	cas	AC/ER	Yes
4	30-39	Yes	1	cas	AC L&D/ER	Left
5	40-49	No	16	.68	AC/ER	Yes
6	20-29	No	1.3	.68	ER/OR occ L&D	No
7	40-49	No	11	.7	AC/ER L&D	Yes
8	20-29	Yes	1.5	cas	AC/ occ ER	No
9	30-39	No	15	.5	AC/ER	Yes
10	40-49	Yes	6	cas	AC/L&D ER/Endo	Yes
11	20-29	Yes	3	cas	AC occ ER	Yes
12	20-29	Yes	4.5	.68	ER occ/AC	Yes
13	50-59	No	29	.63	AC/ER	Yes

Note. Full-time Equivalent = FTE: cas = casual. Areas Worked: AC = acute care (mix of medical, palliative, awaiting placement patients), ER = emergency room, Endo = endoscopy, L&D = labor and delivery, OR = operating room; occ = occasionally.

However, the only contextual factors that participants identified as influencing their

just-in-time learning activities included previous urban experience, years of working in rural, their FTE, and areas worked. Thus, I omitted the others in the subsequent discussion. In addition, I have identified each participant's age in a 10-year range to protect their privacy and anonymity.

Nine participants indicated having previous urban experience, a contextual factor I incorporated into the *Who/What Are My Go-To Resources?* theme in Chapter 5. The time participants spent working as an RN in the rural hospital workplace ranged from one to 31 years. Only one participant held a full-time position; six were part-time of .5 FTE or greater, and six held casual positions. Of these part-time/casual participants, one held a part-time FTE in one rural hospital and a casual position in a different rural facility; another held a casual position in a rural hospital and a part-time FTE in a different area of nursing. The combination of these contextual factors contributed to each participant's level of expertise.

To interpret each participant's level of expertise (novice, advanced beginner, competent, proficient, or expert), I used Benner's (1982) novice to expert model (see Figure 10) and Eraut's (2000) typology of modes of cognition (analytic, intuitive, and deliberative). In addition, I used my 37 years of experience working as an RN in the rural hospital workplace to guide my interpretations – 22 years as a staff nurse, and 15 years as a BScN educator.

During this study, I learned from the participants that, given the diversity of a rural RN's practice, it is possible to be at one level on Benner's (1982) expertise continuum in a certain area of the rural hospital workplace, but to then shift up or down the continuum dependent on the situation, the type or degree of learning required, and the amount of time available to engage in that learning. For example, an RN may be expected to work in a certain area of the rural hospital workplace and, during an emergency, be needed to assist in a different area of that hospital. If the knowledge required in the other area is new or unknown to them and/or necessitates a considerable degree of learning in a short period of time, their level of

expertise may shift down the expertise continuum, which in turn can reduce their degree of confidence in their ability to enact the role capably and safely. Conversely, if they are asked to support a peer in a different area with something for which they are knowledgeable about, they may shift up the expertise continuum.

Figure 10

Illustration of Benner's Written (1982) Novice to Expert Model
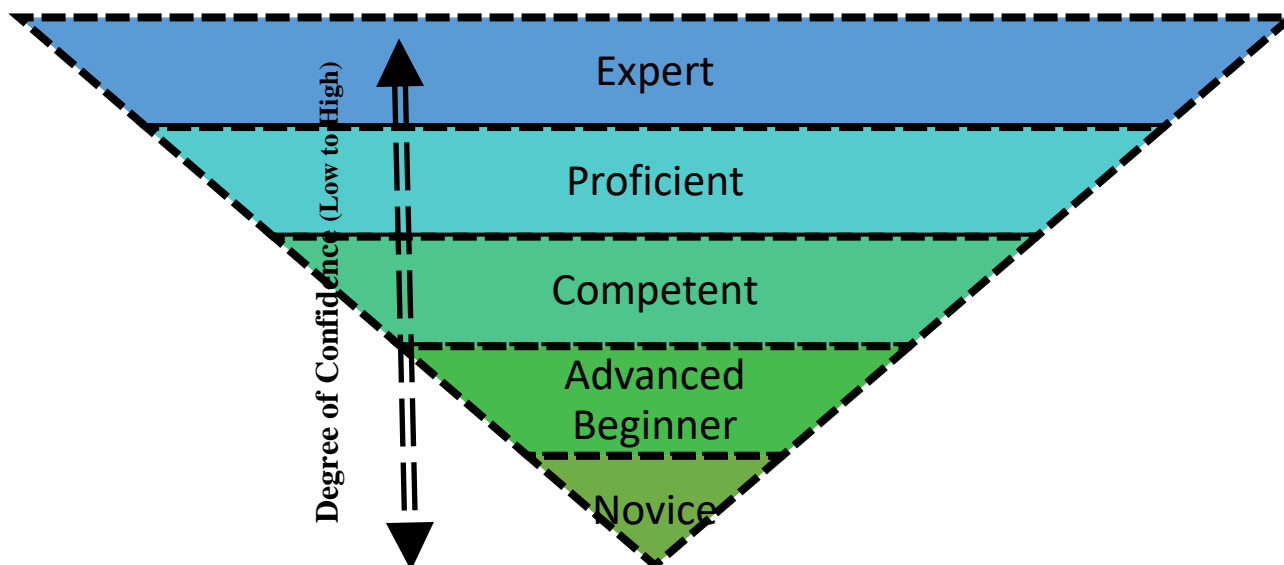
Nonetheless, RNs who may be at a certain level of expertise in a different setting (urban or rural) or in a rural setting to which they are returning from an extended period away, may shift down the expertise continuum when starting out in a new or renewed role. In these cases, there is a need to rebuild their confidence to its previous level. Moreover, RNs who have previously worked full time and then markedly reduced their number of FTEs may shift down the expertise continuum, and thus experience less confidence in their ability to practice capably and safely.

Novice

For this study, I interpreted that none of the participants were consistently practicing as novice RNs. Nevertheless, I learned that an advanced beginner RN who has been expected to practice in one area of the rural hospital workplace can feel like a novice when asked to

121

occasionally assist in another area they are less familiar with, such as the ER.

Advanced Beginner

I interpreted that one participant (Tina) had been practicing as an advanced beginner RN in one rural hospital workplace but as a competent RN in a different rural facility in which she described being provided optimal educational support and an expectation to only work on the medical unit. At the time of her interview, she had quit the job in the first facility because she had been expected to assist in the ER (an area somewhat unfamiliar to her) without the appropriate educational or senior colleague support. In this situation, she felt like a novice RN who was floundering in her ability to provide patient care capably and safely. She needed clear parameters and guidelines for providing that care, which was not available to her. Consequently, Tina felt unsafe in her RN role, which contributed to her low degree of confidence and subsequent decision to leave that rural hospital workplace.

I didn't feel…safe practicing…in XXX. The way XXX's setup is you basically have one RN in emerg, one RN in acute care and you might have an LPN [licensed practical nurse]. And…I remember one night…I was…the nurse on acute care, and I got pulled over to emerg to help the nurse there and it was for a [patient experiencing a] stroke. And…it took me…10-15 minutes into the situation to even know that it was about a stroke. …that's how chaotic it was.

Competent

I determined that three of the participants in this study (one of whom was Tina) were practicing at the competent RN level. Chantal, who was only expected to work in the ER, indicated that her confidence in her ability to provide capable, safe patient care was influenced by the amount of time available to formulate plans of care. Plenty of time enabled her to engage in conscious, abstract, and analytic contemplation of the problem through just-in-time accessing of information to gain a perspective about the situation. To reduce her anxiety level during the

following emergency situation, Chantal used her analytic cognition and anticipatory planning

skills to prepare potentially needed medications: *I…had prepared…all the drugs that may be*

needed…so…if something did happen, I wasn't panicking to get those drawn up. …I had enough

time to go to the parenteral manual…to find them beforehand. I'm like 'I'm not waiting until she

starts to crash, I'm gonna get this ready beforehand'.

In the next excerpt, Chantal deemed that having enough time to engage in learning

about a procedure or protocol has elevated her confidence in enacting the needed patient care:

…if I can read a protocol…before I do something. If I have the time to do that, I'll feel a lot more

confident…doing it. …I [have] read the protocol…I know what the standards are. I know how to

properly do it. Then I feel great doing it. Nevertheless, the urgency of a situation, which allowed

no time to for Chantal to engage in just-in-time learning, has rendered the need for her to be

walked through a patient care protocol step-by-step by an urban physician expert, whilst

simultaneously completing the interventions of that care. This latter type of situation slid her

down the expertise continuum to that of novice or advanced beginner, which caused feelings of

unease and reduced confidence. She described it this way: *…when I don't have the time to think*

and…you're just go, go go…it does make you nervous when you're just doing it [patient care] by

what somebody told you and not because you know that knowledge.

Another participant whom I interpreted as a competent rural RN is Ric. When plenty of

time was available, she too formulated patient care plans based on considerable conscious,

abstract, analytic contemplation of the problem to establish a perspective about the situation. In

one situation in which she needed to perform a task that she had infrequently performed (a

wound vacuum dressing change), she initially used her analytic cognition to analyze online

resources. However, once realizing that the needed patient care was more complex than she had

anticipated, she used her deliberative cognition to consult a more experienced peer. Together,

123

they learned how to complete the task capably and safely. She explained:

...I was... '...I need to...refresh my memory on the...the step-by-step order on how to properly do the wound.' ...So, I...looked at multiple resources...to make sure that if one resource was lacking...the other resource would be able to...fill in the gaps and that there was... consistency between the...resources. ...I started...on my own. ...once I went into...assess the patient...I realized that it...was going to be a lot more complex. ...that's when I decided to call on another staff member...who was more senior and had more experience.

In a different emergent situation that afforded little time to learn, Ric was left feeling *incredibly stressed* and like an advanced beginner, even though she had experienced a lot of staff support. She admitted to needing supportive cues to enact her role during an emergency code situation and feeling unsure if she could have effectively provided care if the supportive team had not been there. She stated: *...I was like 'I have no idea what I'm doing but now being...put on the spot to do.' ...I was thinking...'if I had to do something a lot more complex...like...give Epinephrine I don't even know if I could administer [it].'*

Proficient

I determined that two of the participants (who had been experts in urban facilities) were practicing at the proficient RN level due to the casual nature of their work. I also determined that two others were practicing between proficient and expert levels. Nonetheless, all four used their priority setting skills to manage a range of situations.

Mel (proficient to expert RN) clarified this priority setting skill as asking herself, *how do I coordinate these things...what is the priority? Who is the priority?* She also emphasized that managing infrequently performed tasks or complex patients has often left her not feeling *personally confident* because *[they're] not something that...[she] deals with on a daily basis.* She compared her confidence level to those who work in a tertiary-level ER: *...I think*

about…the UofA [University of Alberta], where they see complex patients all the time and they have traumas all the time and they're very confident and competent in those skills. She has countered her lack of confidence by preparing herself through *seeking out [her] own educational experiences…and…trying to continue with… lifelong learning*:

Tess (proficient to expert RN), who has been working in the *high acuity, high stress environment [of the ER] for some time*, perceives situations as wholes rather than in their parts. This ability *to ground [herself] very quickly to…focus on the task at hand* has made challenging situations more manageable. She admitted that *internally it might feel chaotic but that [she's] gotten pretty good at managing that [feeling].* To begin, she draws her thinking to the current situation and its competing demands. She then uses a combination of her intuitive cognition and previous experience to focus on prioritizing the sequence of interventions that need to be completed based on their level of acuity (urgency) and how soon they need to be performed. Lastly, she uses her deliberative cognition to problem solve solutions to the situation. She made clear her thinking and prioritizing processes: *…prioritizing what the different competing demands are and then trying to prioritize based on urgency and having that order…helps me being… 'okay…this is what I…go through first…second and third and fourth and so on'.*

Likewise, Daisy (proficient RN who had previously been an expert RN on an urban unit and now works casually and mostly on the medical unit) uses her intuitive cognition to prioritize the acuity levels of her patients and to determine who needs her attention first when beginning her shift after listening to the previous shift report. She outlined her thinking this way:

…you get given your assignments; you've gone through report. Now you…prioritize, which patients are going to go first?... If I have somebody who is more acute like…a chest tube patient for example, which is not very common up here…I go there first because my other patients are usually awaiting placement. …to me that's just your basic prioritizing and…using

125

what you learned in school…[and]… your memory bank.

In addition, Daisy purported that her confidence level has been based on her current *knowledge* about the patient care needed and her *comfort level* in providing that care, which stems from her formal education. She stated: *…if…I've had…education on these things, I'm a lot more confident in my abilities. …for example, I'm not a maternity nurse. So…I'll be the other RN, they'll put me in charge, and…leave the other RN as the maternity nurse.* Even then, Daisy stressed how the *…walk from acute care to emerg is…a long hallway…some days it's not long enough, depending on what you've gotta look up before you get to emerg.* She explained how *your brain goes out the window [and] you start second guessing yourself* when needing to perform an infrequently performed task such as resuscitating a patient. These cases have reduced Daisy's degree of confidence, thereby sliding her down the expertise continuum.

Similarly, Shelly (proficient RN) expressed that her first encounter with an emergent situation alone and *being it* in the rural hospital ER had been *completely overwhelming.* Her strategies to counteract this level of stress included focusing on the problem and pushing herself to make the patient care happen. She used her intuitive cognition to return to previously experienced foundational principles to look at the situation as a whole and to set priorities: *your mind goes blank, and you…take this big breath. And…because there's no one else, like, in a super acute situation…you…have to make it happen. …I say to myself, 'focus…how does he look? He's not great.' …you're…just going through the basics [ABCs].* She then highlighted that*…[with]each scenario…you're a little bit stronger next time, because you learn from it.*

Expert

For the six participants in this study whom I interpreted as expert rural generalist RNs, the expectations of their role typically included engaging in just-in-time teaching activities with less experienced staff. These RNs generally approached situations with a high degree of

confidence that was related to their vast experience of working in the rural hospital workplace and frequency in making critical decisions, whilst quickly accessing the needed blended educational resources to support practicing capably and safely. I address these points in the Chapter 5 subtheme *How Do I Manage When I Am the Resource?*

When these expert RNs did engage in their own just-in-time learning activities, they were equipped with a strong sense of what they knew, did not know, and where to find the answer amongst the blended educational resources available to them. Lucy explained this type of insight: *I think it's easier for me because I have been nursing for so long that I have…a more realistic sense of the things that I don't know. And I know if I don't know the answer, I at least know where to look.* She stressed that she and the staff with whom she works are *…open and willing to admit when they…don't know something and…willing to ask for help.*

Ashley explicated her approach to emergency situations as consisting of remaining calm, using anticipatory planning, reflecting on previous experience, thinking about policy or procedure, prioritizing, and assessing the situation in its entirety. She outlined this step-like approach: *…first…stay calm. Second…anticipate the situation. …reflect on previous experience, reflect on…policy. …And then when you walk in, see where those priorities are being addressed or not being addressed and…step in and…look at what needs to happen there.*

Notably, the insight of expert RN participants enabled them to quickly examine and choose the appropriate blended educational solutions needed to readily attend to their just-in-time learning needs using whatever mode of cognition necessary – analytic, intuitive, or deliberative, often all three simultaneously, while also assessing the consequences of their decisions and reframing their thoughts about a situation (if warranted). As Jane put it, *[I ask myself] how can I figure out how to do this in the fastest way possible in the safest way possible? …And who can help me do this?* Jane indicated next how she has used online educational

resources while collaborating with the team (off- and on-site) to engage in just-in-time learning activities: *…I asked that nurse [from urban] to give me the lowdown. I did get the policy and… had that with me as well. I try to outsource and get…as many hands onboard because…the greater the number of hands and minds the better, and working together seems to work best.*

In the following excerpt, Ashley's expertise and high degree of confidence is apparent in how she plans to embrace performing procedures she has learned in theory or on a mannequin but never on a live patient. She stated: *I've mimed through and worked through all…the scenarios where you put in one of the great big, huge chest tubes, but I've never…physically done it. But if it happened to me on my next shift, I would just jump in there and do it.* She claimed that doing so merely requires using *the basic principles of nursing – try to keep everything sterile and clean. Do your talkback for orders, stay calm. Try to be as organized as possible, document as best you can. And get 'er done.* She also expressed the importance of maintaining a positive mindset: *…I'm like, it's gonna go and it's gonna go well.*

Differently, Choco contended that embracing new learning alone in the rural hospital workplace at times has been challenging for her because it has required giving herself permission to embrace the unknown while recognizing that she was probably the best option the patient had in that moment. She explicated her wavering degree of confidence: *I felt like there [were] a lot of barriers to allowing me to give myself the right to just change a dressing [never performed before].* Choco conveyed that managing these situations has been *morally and ethically* challenging for her because of the safety implications for patients. To overcome these thoughts, she reminds herself that she is …*probably the best that the patient has right now.*

Moreover, Ashley emphasized that if one shifts to working in a new facility or returns to a previous one in which they were an expert, they still need time to learn the nuances of these settings to return to their previous confidence level. As follows, she made clear her thoughts

about how her confidence level may lessen in relation to changing jobs:

>*…if I started working at the XXX hospital down the road…their rhythm, their patient population is slightly different, their potential codes are slightly different. Their communication system will be slightly different, and it would take me months…until I was as confident in that setting as I have been in the past here. And even now coming back from being away for a year, I don't have the confidence even in this setting to work as well as I was working two and a half years ago, because I'm just not used to the place anymore.*

Mickey explained that, to maintain her generalist expertise and keep her confidence level high, she makes sure she keeps her continuing education up to date. She communicated her thoughts about maintaining her skill set: *I'm…on top of…making sure my education and stuff is up to date. …I don't…let anything [certifications] lapse…because I have so many areas that I…work and I don't…like that feeling of 'I don't…know what to do.'* Next, I turn to the theme *What is the Situation?* that includes the range of situations participants have encountered in the rural hospital workplace, which have required them to engage in just-in-time learning activities.

Theme 3: What is the Situation?

In this theme (see Figure 11), participants' levels of expertise (ranging from advanced beginner to novice) and their degree of confidence (extending from low to high) influenced their perceptions of the complexity of the situations they encountered. I interpreted these perceptions as the subtheme *How Do I Perceive the Situation?* using Snowden and Boone's (2007) definitions of simple, complicated, complex, and chaotic situations. I then examined how patient acuity levels (ranging from non-urgent to resuscitative), in combination with the environmental factors in the rural hospital workplace, contributed to the complexity of these situations in the subtheme *How Do Patient Acuity Levels and Environmental Factors Impact the Situation?*

How Do I Perceive the Situation?

All participants encountered a variety of contextual situations (ranging from simple to chaotic) that triggered their just-in-time learning activities. However, what may be perceived as a chaotic situation for an advanced beginner or competent RN might be perceived quite differently by a proficient or expert RN. In addition, situations that may initially be perceived as simple (no matter one's level of expertise) also had the potential to become complicated, complex, or chaotic if the patient started to deteriorate. Ned (expert RN) explained:

[A simple situation] would be something that we would perhaps see a lot of, such as [patients experiencing] chest pain…they can become complicated…complex or chaotic if they go into an MI [myocardial infarction] or…code. …but we see a lot of [people experiencing] chest pain in a day, and it can be a multitude of things causing that chest pain. So, the first initial treatment of most chest pain unless they come in pre-code is pretty routine…pretty simple.

Figure 11

Theme 3: What is the Situation?
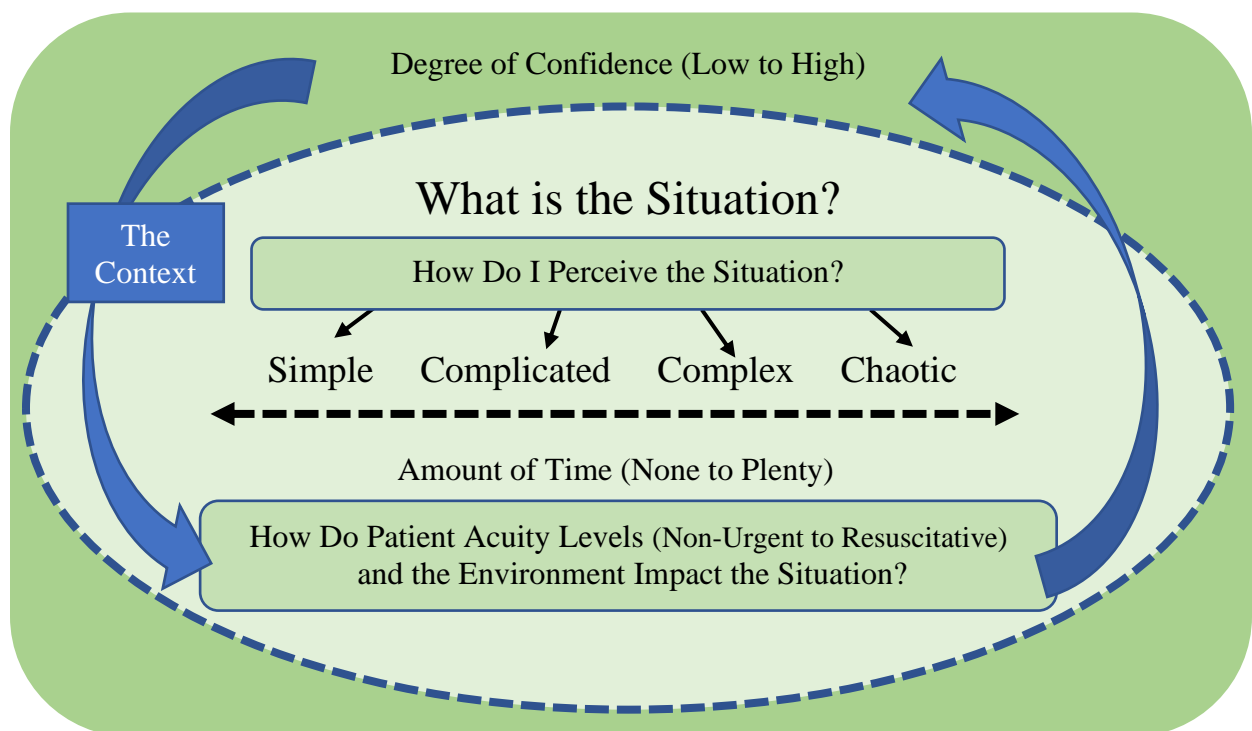
For Ned, simple situations of known knowns put her in *autopilot* because she has experienced them repeatedly; therefore, they have become routine with clear answers based on evidence and do not require her to engage in learning. She explained them this way: *simple for me…It's something that I have done over and over. I don't have to do any research.* Nevertheless, all participants pointed out that when the level of complexity of a situation increases, the number of unknowns increases, the ability to discern plausible answers decreases, and the amount of time to engage in just-in-time learning activities to generate the needed answers decreases. In the following excerpt, Ashley (expert RN) used the term *level of pressure* to describe how the complexity of a situation versus the unknowns and amount of available time have influenced her ability to engage in just-in-time learning activities:

> …w*hat level of pressure…is there on you at the time? Are you in a simple scenario where you have the time to…carefully read through a policy and think through what the skill moments are going to be…is everything under control enough for that…time consuming thought process? Or [are] you in a complex scenario, which becomes and feels chaotic because you are not experienced with it? Or are you in a more complex place because you don't feel confident with what's going on and you…need to do some prep and…research to…to execute the skill?*

Likewise, Tess (proficient to expert RN) described how plenty of time associated with a *simple scenario* has enabled her to access an array of educational resources to engage in deep learning about the unknowns of the situation, which differs from a chaotic situation that only affords enough time to capitalize on the key learning points needed to safely provide patient care. She explicated the time difference and its consequences subsequently:

> …*when it's a simple scenario…time affords me the ability to gather more information and access more resources to make sure that I really know what…I'm going to…do. …when it's more chaotic…you end up drawing on the big points that you…need to know but you might not*

131

…get the depth that you would if it's the…simple scenario where you have time to prepare.

Participants also identified other factors that can contribute to how one might perceive the complexity of a situation and the associated just-in-time learning needs. They include level of expertise of the leader/team, time of day/day of the week, equipment challenges, and emotions.

The level of expertise of the team attending to a situation can add to its complexity and the need for just-in-time learning if they are inexperienced and lack the knowledge needed to provide that type of patient care. Ned stated: *…an unsure leader, perhaps someone new, or a team who does not have roles defined, or [does not] know how to carry out their roles…can make a situation appear more chaotic.…It might also be the actual event if you have a team unfamiliar with such an event, such as a shooting or stabbing victim.*

Time of day or day of the week can add complexity to a situation because staffing ratios and access to other professionals in the rural hospital workplace drop considerably after day shift or during weekends when physicians, pharmacists, educators, managers, and administrative staff are typically off-site. These factors reduce the human resources and perhaps levels of expertise available to support the just-in-time learning of teams. Ned claimed: *…at 0800, we have double the staff on as we do at 0300 when the physician is not here, and we have staffing of three or four for the entire hospital.* Similarly, Choco contended: *…we are a 24-hour, seven day a week facility. Monday through Friday we have all these people, and they all disappear on the weekend. And…any hospital can be…busiest on the weekend.*

Choco (expert RN) lamented that during an emergent, complex situation in the ED, Connect Care had been a significant hindrance to providing patient care by contributing to the complexity of the situation. She explained how the screen she was accustomed to was not available to her: *…Usually, there's all these things on the side that you can just click on….* She also expressed that she *couldn't even record…*which was distracting because she…*got hooked*

[focused] on it, which then required just-in-time learning support from her site administrator.

Tess (proficient to expert RN) pointed out that *emotions* play a key role in how staff perceive the complexity of situations and that *higher acuity situations* can be more *stress provoking* because of the unknowns associated with them and the want to find answers to ensure that they are managed well. She deemed that *controlling* one's *emotions* is required for working and learning in a high stress environment like the ED. She stressed: *…a lot of [heightened] emotions come out of…the stress and anxiety of the scenario and making sure that it doesn't get worse. …there's a lot of unknowns…and not knowing things could be very stressful.*

To manage her emotions during complex or chaotic situations, Tess focuses on the information she requires to provide patient care capably and safely, which then provides her *direction* and *reassurance* because it supports *…knowing what…needs to be done or what can be controlled.* This knowledge then boosts her confidence level. In her words '*how can we…know what it is…that we're dealing with? Because that will give us better direction. And the more information we have, the more direction we have, and then the more confident I can be?*'

The complexity of what is happening in the rural hospital environment at any given time (ranging from simple to chaotic) is influenced by the urgency of the varying patient acuity levels (ranging from non-urgent to resuscitative) amidst the array of simultaneously occurring on-site environmental factors; I address these challenges next.

How Do Patient Acuity Levels and Environmental Factors Impact the Situation?

To interpret participants' perceptions of patient acuity levels, I used the vernacular of the (2013) Canadian Triage Acuity Scale (CTAS): resuscitation, emergent, urgent, less urgent, and non-urgent (see Table 8), developed conjointly by the CTAS National Working Group and Canadian Association of Emergency Physicians (CAEP). Their intent was to ensure that nurses and physicians working in EDs across Canada would use consistent assessment/communication

skills when identifying patient acuity levels (CTAS National Working Group & CAEP, 2013).

Table 8

Canadian Triage Acuity Scale (CTAS National Working Group & CAEP, 2013)

Level 1 Resuscitation	Level 2 Emergent	Level 3 Urgent	Level 4 Less Urgent	Level 5 Non-Urgent
"Conditions that are threats to life or limb… requiring immediate aggressive interventions" (slide 5).	"Conditions that are a potential threat to life, limb or function, requiring rapid intervention" (slide 8).	"Conditions that could potentially progress to a serious problem requiring emergency intervention. May be associated with significant discomfort or affecting ability to function at work or activities of daily living" (slide 12).	"Conditions that relate to patient age, distress, or potential for deterioration or complications, which would benefit from intervention or reassurance within 1-2 hours" (slide 16).	"Conditions that may be acute but non-urgent, as well as conditions which may be part of a chronic problem, with or without evidence of deterioration. The investigation or interventions for some of these illnesses or injuries could be delayed or even referred to other areas of the hospital or health care system" (slide 19).

High acuity patients (CTAS levels 1, 2, 3) require immediate, rapid, or emergent

interventions, thereby limiting the amount of time available for RNs to engage in just-in-time

learning activities, especially when in combination with environmental factors such as heavy

workloads, demanding patients, and staff shortages. Lucy (expert RN) made clear these

environmental challenges and how sometimes staff forfeit just-in-time learning due to the need

to provide rapid patient care: *…quite often, we're feeling rushed because of workload, because*

our patients are demanding and some…are really complex. And when you're short staffed

and…emerg is full and the floor is full…I think people find it hard to…do the research.

Similarly, Jane (expert RN) confided that in the rural hospital workplace in which she works, the staff have been increasingly expected to manage more high acuity patients than previously because of shortages in urban centres. She also deemed that this kind of practice borders on being unsafe: *…we have to manage a lot and try stabiliz[ing] a lot. And especially now with all the shortages. We're dealing with really, really sick people. So, I feel we're being challenged to almost do more than is safe.* She described one of these emergent, complex situations and how the associated recommendations from the AHS contact call center (RAAPID) for obtaining advice and transferring patients to a higher level of care were beyond what they could manage: *Like the other day, we called RAAPID for someone who kept switching into SVT [supraventricular tachycardia]. And they wanted us to give Amiodarone and then start an Amiodarone drip. And we're like, we can't do that in XXX. We don't even…have intubation.* Jane then stressed how these types of situations have rattled her confidence in her ability to practice capably and safely: *…you feel scared because you…don't have the supports. 'What if something happened? …what if he coded? …there's just so many what ifs.'*

Furthermore, a mix of mid to high acuity scenarios occurring simultaneously, one stand-alone emergent or resuscitative scenario such as the one identified in the previous paragraph, or other factors like staffing shortages, can readily overwhelm the staff, thereby creating a chaotic situation. Choco (expert RN) explicated her perception of the *continuum* of complexity:

…if one wheel falls off the bus, it's one thing but if all the wheels fall off the bus… whether it's another sick call or…there's a code in ER …[or]…I think somebody's giving my meds…and…she's been pulled into…the OR and I get back to the floor and…she…hasn't seen my patients for three hours or whatever,… that's where…a complex situation could get chaotic.

Moreover, Lucy stressed that every day in the rural hospital environment has the potential to be chaotic because of the inadequate number of staff available to care for the range

of high acuity patients they encounter. She explained it this way: *It's chaotic, because…there's usually…not enough nurses on for the acuity of the patients that we see and…whether it's a bear attack or a multi…patient car accident, it's that we don't have enough staff.*

In contrast, Ric (competent RN) and Choco (expert RN) both highlighted that situations with the potential to become chaotic can be mitigated by a variety of intervening environmental factors. During one shift that Ric worked, these elements included the expertise of the available staff and outside resources, as well as the timing of the multiple complex events. She deemed: *…when they do…vacuum assist [deliveries], they…end up calling the OR team in…so…they are…at a surplus for staff members in that room. …then at the same time emerg…[was] running their own code, but…STARS came. …the timing of things…happened quick enough, so that it never got to be chaos.* Likewise, Choco admitted that an emergent situation she had attended did not become chaotic because *STARS could fly [and] the other paramedics were there, as well as the paramedics [who] drove the patient in,* all helping the local rural team.

Interestingly, one rural hospital workplace ED was staffed impressively, which reduced the chaotic situations experienced in that facility. Tess (expert to proficient RN) made clear this staffing ratio: *…there are three RNs and two LPNs on days, four RNs, [and] one LPN [on evenings], and then on nights…two RNs and two LPNs.* In addition, Tess indicated that they are staffed with *two unit clerks…[who] do 12s so they are all day and all night*. She acknowledged that this type of support *is kind of rare* in the rural hospital environment, as typically, rural hospital EDs are not staffed with a unit clerk during night shift. This form of staffing ratio differed significantly from those of the rest of the participants in this study. In many rural EDs there was only one RN working night shift. Daisy and Mel clearly stressed this lack of staffing within the facilities in which they work: *Okay, like on a night shift in emerg there is one RN, that's it [Daisy]* and *it's just me and the doctor [Mel].* To counter staffing issues, Tina

(competent RN) stated that where she currently works, the staff themselves try to *make sure…there is someone who…has charge nurse training [and] is…more experienced.*

I now turn to the theme *What Do I Need to Learn?* In this theme, the context is that participants encountered patients of varying acuity levels (ranging from non-urgent to resuscitative) within a variety of situations (ranging from simple to chaotic) that triggered the need to learn new information or to review previously learned information.

Theme 4: What Do I Need to Learn?

To interpret participants' perceptions of *What Do I Need to Learn?* (see Figure 12), I used a combination of the CTAS meanings for patient acuity levels (ranging from non-urgent to resuscitative), Snowden and Boone's (2007) definitions of situations (ranging from simple to chaotic), and the first two steps of Watkins and Marsick's (2021) adapted model of informal and incidental learning. These steps include: 1. Encountering a learning trigger (a problem or learning opportunity) and 2. Interpreting the learning trigger (within its context).

Participants' perceptions of their learning triggers stemming from the variety of contextual situations they encountered were significantly influenced by the following factors: the amount of time available to engage in just-in-time learning (ranging from none to plenty), the degree of learning needed (ranging from none to considerable), and their degree of confidence in their practice capability (extending from low to high). Simple situations involving non-urgent patient care interventions typically afforded plenty of time for learning, whereas those of greater acuity and complexity did not.

New Information

Participants encountered a variety of situations that required learning new information. These just-in-time learning needs included new documentation, unknown systems/location of equipment, unknown medications, non-routine procedures, physicians' idiosyncrasies, and

137

unknown treatments/procedures.

Figure 12

Theme 4: What Do I Need to Learn?

Degree of Confidence (Low to High)

Amount of Time (None to Plenty)

How Do Patient Acuity Levels (Non-Urgent to Resuscitative) And Environmental Factors Impact the Situation?

The Context

What Do I Need to Learn?

New Information
- New Documentation
- Unknown Systems/Location of Equipment
- Unknown Medications
- Non-Routine Procedures/Orders
- Physicians' Idiosyncrasies
- Unknown Treatments/Procedures

Review Information
- Infrequently Performed Tasks
- Medical Terminology
- A Different Context

Degree of Learning (None to Considerable)

New Documentation

For one participant, the expectation by her manager to use new documentation for trauma care, without any introduction to it, triggered considerable just-in-time learning activities when providing emergent patient care. Jane (expert RN) called it learning *on the fly* because she was learning how to perform a skill, whilst simultaneously being guided how to do the skill by a

peer. She described the complicated situation this way: *…we got told [by the manager] 'there's these new trauma records in emerg now.' …then we had a three-person trauma come in. …the LPN…read the assessment, and then we did it…that was…very much just-in-time learning.*

Documenting a non-urgent patient care procedure during a complex situation in the ED triggered considerable just-in-time learning for Ric (competent RN). She was working on the medical unit and was asked to assist in the ED with a minor procedure because the staff were busy with other high acuity patients. She had not been orientated to the online ED Connect Care system used to electronically house and document patient care, but then was expected to use it on her own to document the non-urgent procedure she had performed. She identified her learning trigger this way: *…we had just switched over to…Connect Care, so emergency charting is completely different. And because I'm not trained in emerg…they didn't…put me through the Connect Care modules for it. …it was…a huge learning moment where I really had to think.*

Unknown Systems/Location of Equipment

For two participants, just-in-time learning was triggered due to lack of knowledge about equipment/systems in the rural hospital workplace. Shelly (proficient RN) experienced a simple situation when working with a locum physician who requested a piece of equipment for a less-urgent patient that triggered a minor degree of just-in-time learning. She stated: *…the physician …said to me, 'hey, I need a manual cuff'…and no one had showed me where the manual cuff was stored. So, then you're…trying to scramble to find [it].*

On a different shift, during a complicated situation, Shelly experienced a learning trigger that required a moderate degree of just-in-time learning when needing to quickly decide how to urgently assist a *weak* obese patient from a private vehicle into the ED. She was unsure of who to call for assistance or if sending the patient directly to the city was a better option, solutions vastly different from what she had encountered when working in an urban hospital. The

139

potential solutions left her questioning the safety of the situation. Shelly explained:

So, a lady…drove her husband to emerg in a private vehicle, and the man was so big, I don't know how she got him in there. …But when he got to us, he couldn't get out on his own. …we're like… 'Should we call the fire department?…how do we get this guy out of the vehicle? …do we just direct them…to keep driving to XXX? Is that safe enough? Would he make it? Does he need an ambulance?' So that's something…I would never have to deal with in the city.

As a new employee, Ric (competent RN) encountered a chaotic situation that triggered a minor degree of just-in-time learning, whilst affording little time for that learning. She was working on the medical unit and had not been taught the routine for calling a patient code (resuscitation) in that facility. Ric explicated the learning trigger this way:

We…have this intercom system and…I [called the nursing station and] said 'I need help right away; I think my patient is coding'…luckily, there was a very experienced healthcare aide in the hallway. …I said, '…I need you to call a code blue.' [She said] 'you can…just dial #66 on the room phone and it'll…intercom the entire hospital.' So that was something…I didn't know.

Another just-in-time learning trigger for Ric during the above situation was not knowing the system in the rural hospital workplace for identifying a patient's code status, which required her to engage in a minor degree of just-in-time learning. She learned that the code system differed from what she was accustomed to in an urban cardiac unit in which she had previously worked. Ric described that *stressful*, near miss situation in the following excerpt:

Coming from a cardiac unit, we had…our patients' code status[es] labeled on their wristbands…and…also printed on their whiteboards. But in acute care, the individual's code status was nowhere to be found. [The] chart was up at the nursing station. …the only source …was this Kardex…and I was looking through it… [and] confusing her with another patient. But luckily, when the other nurse came over, we…clarified which patient it was.

Unknown Medications

As a new RN, Chantal (competent RN) experienced a just-in-time learning trigger requiring a considerable degree of learning when administering medications (unknown to her) for an emergent patient. She stated: *But…as a new grad…I've never even heard of these drugs before. And so, I was giving them for the first time ever as the nurse in charge.*

Non-Routine Procedures/Orders

Three participants encountered just-in-time learning triggers in relation to being expected to manage non-routine procedures or physician's orders. For Lucy (expert RN), managing the frequently changing guidelines for patient care associated with the COVID-19 pandemic created chaos in the rural hospital workplace in which she worked and a considerable degree of just-in-time learning. These rules, which were imposed by people in urban facilities, triggered confusion and ongoing, emergent learning as she indicated below.

…in relation to COVID when…that stuff first started, it was awful, because…the rules were changing on an hourly basis. It was…very confusing because…we were getting…rules from…Alberta Health Services and urban centers that would never…work in a rural environment. …And what the rules were at eight o'clock…were totally different than what they were at noon, when they were different again, by the time we left for the day.

A physician's non-routine request for the supplies to build a Pleurex drainage system for an urgent patient was a complicated situation that triggered a moderate degree of just-in-time learning for Tina (when an advanced beginner RN). The challenge for Tina was trying to understand exactly what the physician wanted when she was used to having this resource available as a whole system and not in its parts. She stated: *…it was trying to understand [the physician's] thought process into…creating what I'm used to…as one whole system. …when [the physician]…asked me '…can you get me the stuff so I can make a Pleurex drain?' …I'm like…*

141

'We don't have…Pleurex drains?' [The physician's] like, 'no, I want to make one.'

For Ric (competent RN), a physician's non-routine medication order for a simple, non-urgent situation triggered confusion and the need for a minor degree of just-in-time learning. The cardiac medication ordered by the rural physician was not prescribed in the way she was accustomed to when she worked in an urban cardiac unit, as imparted in the next excerpt: …*the doctor ordered Diltiazem cream rectally. …we were using the handwritten order…so I was…trying to transcribe it and I wasn't sure if I was reading it correctly because…I had never seen this before. We in the cardiology [unit]…used Diltiazem for…other reasons.*

Physicians' Idiosyncrasies

Shelly (proficient RN) and Choco (expert RN) found that managing physicians' idiosyncrasies when working in the ED were simple situations that triggered a minor degree of just-in-time learning to enable providing timely urgent or emergent patient care. Shelly claimed: *It would be…efficient if I could call the doctor, monitor [the patient], have bloodwork results back. Some doctors…were…, 'oh, you did an INR [international normalised ratio], great.' And some [were], 'who do you think you are?' …you have to know…who would accept it and who wouldn't?* Choco expressed: …*some doctors…say…'put those pads on AP [anterior, posterior]' and some say '…put them on like this' and you say, 'What are we doing today?'*

Unknown Treatments/Procedures

All participants perceived encountering situations in which they needed to learn about a treatment or procedure they had not performed before. Some of these situations included performing dressings on coronary artery devices (CADs), managing the specialized care or wound treatments of patients transferred from urban centres, managing pediatric emergencies, and assisting with emergency procedures without any orientation to the area.

Performing the dressing on a patient with a CAD was a non-urgent, complicated

procedure that triggered just-in-time learning for Choco because she had never done it before and did not have adequate support from the on-site CNE to teach her how to do it. She explained this stress-provoking situation: *Someone came in with a CAD…and I had to…change the cap. …I was like, 'I've never done one.' … I called the educator…and she blew through it when I [had] 50 other things that [I was] doing at the moment…I was angry.*

Managing the non-urgent treatment procedures of a patient transferred from an urban facility was a complicated situation that triggered a considerable degree of just-in-time learning for Lucy (expert RN). She needed to learn how to provide care for a patient who was *palliative, and…[whose] cancer had spread to her lymph nodes in her leg*. She required specific *edema measurements* (an order from an urban oncologist with no instructions on how to perform them). Lucy acknowledged that this procedure *was totally outside of [her] wheelhouse.*

Likewise, Ric (competent RN) found that dealing with a non-urgent wound dressing ordered by an urban physician was a complicated situation that triggered a considerable degree of just-in-time learning. She claimed that the lack of required supplies in the rural hospital workplace forced her to adapt the ones she did have available: *The patient was from the city, and the wound care orders…[did not] account for the lack of resources at our site. So, we ended up having to replace the ordered silver dressing with a variation that was available to our site.*

The need to manage the unknown treatments/procedures associated with caring for an emergent pediatric trauma patient during a chaotic situation triggered a considerable degree of just-in-time learning for Chantal (a relatively new but competent RN). She and her mentor were initially alone with this child as the physician was on call and off-site. Chantal stated: *…it was me and…my mentor... and I have no physician yet because [the] doctor's on call. We got a call there was a two-year-old near drowning, who was resuscitated on scene and was now awake but very unstable. So, they brought [the child] in and…it was just the two RNs.*

143

Tina (when an advanced beginner RN) experienced a just-in-time learning trigger during a simple situation when expected to work the ED with little to no emergency nursing experience and needing to complete a non-urgent eye examination on a pediatric patient. Tina described her moderate degree of learning supported by a physician: …*there was a little boy who thought he got something in his eye…there was some in-the-moment learning where…the doctor showed me the eye chart and where they need to stand and…did the entire process with me.*

During a chaotic situation in the ED, Daisy (proficient RN) encountered a just-in-time learning trigger that required a minor degree of learning that left her feeling *useless* and traumatized. She was working on the medical unit and was asked to assist with a pediatric trauma patient who was being resuscitated in the ED. She was the *hands-free* person who was responsible for finding supplies and was asked for a certain type of intubation equipment that she had never heard of before. In this case, there was no time for her to engage in just-in-time learning. As follows, she explained this *traumatic* situation:

…there was this EMT [emergency medical technician]…asking for…an airway, but it's something…they never had. …I'm your hands free. So, I'm looking everywhere. And I feel very useless…because I cannot find what she's looking for…and it wasn't a situation where you can just…pull out your phone and look [up]…what is this thing? …everyone's emotions [were] through the roof. That was my most chaotic shift in all my 19 years of nursing.

Review Information

Situations requiring participants to review previously learned information triggered varying degrees of just-in-time learning. These learning triggers included infrequently performed tasks, some medical terminologies, and the need to apply previous learning in a different context.

Infrequently Performed Tasks

In the rural hospital workplace, many tasks are performed infrequently, which then

requires RNs to review the relevant evidence-based information needed to perform the task

capably and safely. Infrequently performed tasks outlined by participants as requiring just-in-

time learning included administering certain medications; managing Pleurex drains, peripherally

inserted central catheters (PICCs), intravenous access devices (IVADs), and wound vacuum

dressings; performing phlebotomies; and assisting with chest tube insertions.

For Choco (expert RN) and Daisy (proficient RN), it had been *years* since they had

administered a certain medication, which for both in different complex, emergent situations, was

quickly needed. For Jane (expert RN), it had been *10 years* since she had managed a *Pleurex*

drain. Even though the latter task was for a non-urgent scenario, the degree of learning needed to

safely provide this type of patient care was like that of the other two with one marked exception,

the lack of time available for Daisy and Choco to engage in effective just-in-time learning.

Likewise, what may be routine for one RN may be complicated or complex for another.

For example, an infrequently performed task of managing a PICC dressing was a complicated

situation for Ashley (expert RN) because it triggered a moderate degree of reviewing previously

learned information, as imparted next: *PICC lines are…rare when they clock through…our site.*

…every…year…we're required to do a central line module…then six months later you…

encounter a real human with a PICC line…and you're like, 'oh, geez, what do I do again?'

…it…feels like a whole new skill when you…have to do it on a human being.

Conversely, Mel (proficient to expert RN) contended that managing a PICC line is a

simple task because she often does it; however, she also pointed out that they *don't get very*

many IVADs…and a lot of [the RNs] are not certified to access them because…[they] haven't

accessed them in years. She stated: *We do a lot of PICC lines, but IVADs not so much.*

A different infrequently performed task of assisting a physician with inserting a chest

tube has triggered a moderate degree of just-in-time review of information for Tess (expert to

proficient RN). She made clear this emergent, complicated situation and the learning trigger:

…the most recent one…I had done, was probably about two years prior. …it's…what is the

equipment that needs to be gathered and what skills do I need to brush up on? [and]…setting up

of the system and the monitoring…specialty medications that we don't often use….

For Ric (competent RN) who worked mostly on the medical unit, being asked to assist

with performing non-urgent tasks in the ED was perceived as a simple situation. However, it

then progressed into a complicated one when she was further asked to perform an emergent

phlebotomy in-the-moment, a procedure she had only performed *once previously*. She stated:

I got pulled over to emergency one night to help out. They were quite simple tasks…

then…they asked me to do a phlebotomy. I've only done it…once previously and…this was the

first time…I would be doing it independently. …given…that I was just…pulled in to do the task

…I didn't…have a lot of resources to go to because they needed things to be done quickly.

Medical Terminology

Needing to refresh about medical terminology used by physicians for diagnoses has

triggered a minor degree of just-in-time learning for Daisy (proficient RN). She deemed:

…it's…whatever diagnosis they put on it…if I'm not familiar with it. When [I] look it up, [I'm]

like, …I've heard of that before, but…before looking it up, I couldn't tell you what that was.

A Different Context

When a five-year-old child with a significant head injury was brought into the ED and

the physician ordered a potent intravenous fluid to be administered, Ned (expert RN)

experienced a just-in-time learning trigger. This urgent, complex situation required Ned to

engage in a moderate degree of just-in-time learning because she had not administered *3% saline*

solution for quite some time. She explained the learning trigger: *…although I know about 3%*

saline and have used it before, I can't say that I've ever used it with a child.

146

Chapter Summary

In this chapter, I described the context of RNs' just-in-time learning activities in the rural hospital workplace. I began by providing an overview of the participants' perceptions of how well blended educational resources have supported their just-in-time learning activities, as an overarching theme *It Varies!* I then incorporated the context of the rural hospital workplace into the first theme *My Role*, addressing the three different RN staffing models used within the Alberta rural hospital workplace.

The second theme, *My Level of Expertise* encapsulates each participant's level of expertise (ranging from advanced beginner to expert), how this level has been influenced by their contextual demographics, and how it has contributed to their degree of confidence in their rural RN practices (extending from low to high). The third theme *What is the Situation?* encompasses the contextual situations participants have encountered in the rural hospital workplace (ranging from simple to chaotic). Its subtheme *How Do I Perceive the Situation?* captured the participants' perceptions of each situation's level of complexity. The subtheme *How Do Patient Acuity Levels* (ranging from non-urgent to resuscitative) *and Environmental Factors Impact the Situation?* attended to other contextual factors participants perceived had contributed to each situation's level of complexity. For all situations, the dimension of time (ranging from none to plenty) has influenced participants' ability to engage in just-in-time learning activities.

Finally, in the fourth theme *What Do I Need to Learn?* and its subthemes *New Information* and *Review Information*, I explained the assortment of just-in-time learning triggers participants have encountered in the rural hospital workplace and the degree of learning (ranging from none to considerable) associated with them. In Chapter 5, *It Varies! The Actions*, I highlight participants' perceptions of their just-in-time learning actions as *Who/What Are My Go-To Resources?* and *What Are My Learning Actions?*

Chapter 5. Findings – It Varies! The Actions

In this chapter, I interpret the just-in-time learning actions participants engaged in to support practicing capably and safely as *Who/What Are My Go-To Resources?* and *What Are My Learning Actions?* The first encompasses the blended educational resources participants have chosen to support their just-in-time learning activities and the latter constitutes the actions they have engaged in to actively learn in-the-moment.

To begin, I present an excerpt by Tess highlighting her perceptions of how blended educational resources in the rural hospital workplace have *made a huge difference* in supporting her just-in-time learning activities. For Tess, these learning supports have reduced the unknowns associated with quickly managing urgent patient care situations, thereby supporting her ability to confidently practice capably and safely.

…we very rarely have…a lot of time to prepare for…an urgent skill that we don't do often. So having those resources…just-in-time, does…play a huge difference. …we do our best …doing things like courses and certifications, but it's different when you have to do it in real life in…a time crunch. So having those resources as something to review and…to go over [to] make sure that I know the information…I have to apply…and knowing…the hallmarks of what…I have to do, and the big dos and don'ts…takes away that aspect of not knowing…and it's that aspect of not knowing that for me,…is the scariest of it all.

Theme 5: Who/What Are My Go-To Resources?

The theme *Who/What Are My Go-To Resources?* ([see Figure 13](#)) aligns with the third step of [Watkins and Marsick's (2021) adapted model of informal and incidental learning](#): examining alternatives and selecting solutions. In this theme, participants identified numerous blended educational resources (including themselves) who/that have supported their just-in-time learning activities. The subtheme *Who/What Resources Can I Access Quickly?* captures the

148

thinking processes participants used to access just-in-time learning resources. The subtheme *How Do I Manage When I am the Resource?* attends to participants' perceptions of how they have enacted being a resource for others. To interpret the cognitive thinking processes participants used to engage in these activities, I followed Eraut's (2000) typology of modes of cognition and (2000) typology of informal learning.

Figure 13

Theme 5: Who/What Are My Go-To Resources?
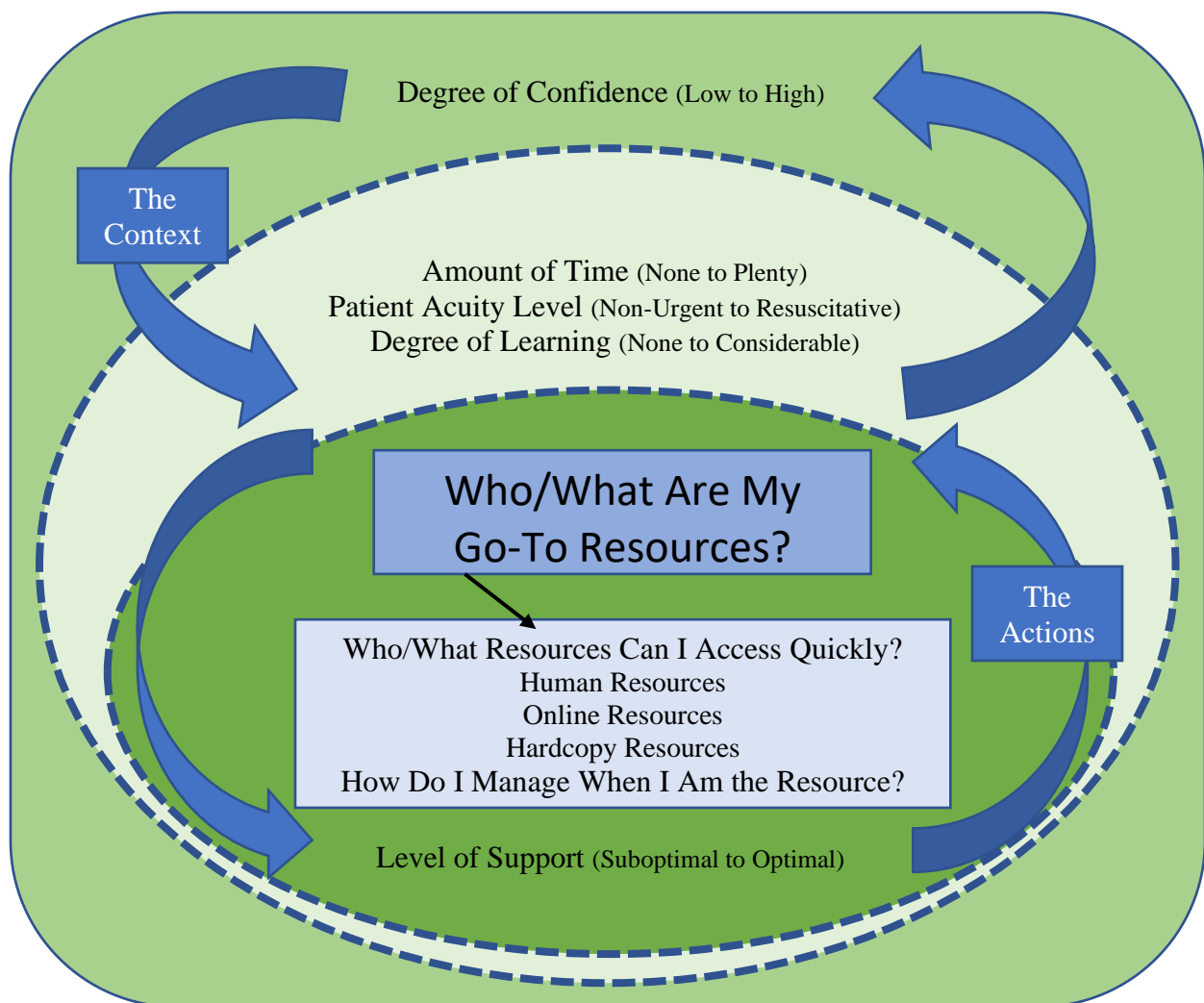
Who/What Resources Can I Access Quickly?

In this subtheme, participants considered which human, online, or hardcopy resources

could quickly and most effectively support their just-in-time learning needs. To examine

alternatives and identify their optimal go-to resources, they used one or more of the following

thinking processes: intuitive cognition to recognize if their prior experience would support

managing the situation by themselves; analytic cognition to critically interpret their familiarity

with online or hardcopy policies, procedures, protocols, and information; and deliberative

cognition to problem solve who/what would be their best go-to resource.

Often, the type of resource accessed was influenced by the amount of time available for

participants to engage in just-in-time learning activities (ranging from none to plenty), which

stemmed from the patients' acuity levels (ranging from non-urgent to resuscitative) and the

complexity of the situation (ranging from simple to chaotic). In addition, the speed by which

participants accessed their just-in-time learning resources was influenced by who was readily

available, their level of expertise, whether evidence-based online resources were quickly

accessible, and sometimes by the participant's level of expertise. Participants who are expert

RNs tended to simultaneously examine and choose their optimal go-to resource quickly, while

those less experienced typically took more time (but not always).

Ric (competent RN) made clear how time related to a patient's acuity level can impact

the types of resources she accesses when engaging in just-in-time learning activities. Evident in

the next paragraph is that she used her analytic cognition to study a protocol and then her

deliberative cognition to seek validation from a senior peer about her decision making:

…if I have a lot of time like…a PICC dressing, something that's not urgent…I could

look for a video because I'm more of a visual learner. …But if I'm in a time crunch…I'll…go to

charge nurse and…be…'hey, I couldn't find a policy for this. This is what I'm going to do….

…do you think my process…my rationale is logical?'

Similarly, Tess (proficient to expert RN) described how the acuity level of a patient

150

dictated the type of just-in-time learning activities she and another nurse engaged in when performing an infrequently performed, urgent, complicated task (intranasal administration of a medication for sedation of a pediatric patient). She explained her deliberative thinking processes this way: *…at that point we're trying to figure out…urgency of the situation. Thankfully, it was…a…laceration repair so…it was an urgent matter, but it wasn't…an emergency. So, it did grant us a little bit of breathing room to…go through the options available to us.* The level of support garnered by human, online, and hardcopy resources ranged from suboptimal to optimal, but frequently human resources were perceived by participants as best for rapidly and effectively supporting their just-in-time learning activities.

Human Resources

The human resources participants accessed varied. They included staff and other professionals on-site; CNEs seldom on-site, and/or specialty resources off-site.

On-Site. Participants accessed on-site CNEs, managers (nurses, site leaders or administrators), RNs, physicians, LPNs, HCAs, pharmacists, and laboratory personnel.

Four participants who worked in or had worked in rural hospital workplaces in which there was a strong on-site CNE perceived being optimally supported with an array of formal (Eraut, 2000; Streumer & Kho, 2006) experiential learning (Kolb, 1984) opportunities. This formal learning supported them in developing their propositional knowledge (Colman, 2009, 2015), which then contributed to their ability to quickly engage in effective just-in-time learning activities. I address formal continuing education support in the subtheme *Learning Through Continuing Education* in this chapter. Participants who lacked the learning support of an on-site CNE were expected to individually decide upon and access the go-to resources they perceived could best meet their just-in-time and formal learning needs.

For three participants, their go-to person has often been their site leader or nurse

manager. Lucy (expert RN) stated: *I'm very fortunate because my site lead…was our former educator, and she's always very hands on.* As follows, it is evident that Lucy's just-in-time experiential learning (Kolb, 1984) has been optimally supported: *So, if there's something…going on in emerg…if we're coding people and we're doing…weird infusions that we haven't done in a really long time, or if we have to do an IO [intraosseous intravenous] on someone, she's… my go to person always.* Similarly, Choco (expert RN) conveyed that her site leader has consistently supported the ED staff during emergency situations: *…the site administrator came because she…always does when STARS is coming or…there's a busy department – she just comes out of her office because she was an emerg nurse.* Likewise, Jane (expert RN) expressed appreciation for now having *a nurse manager with an intensive care unit [ICU] background* who has been a learning resource for her, as she had been without a manager *for the better part of a year*.

In contrast, Mel (proficient to expert RN) raised concern over her manager's *flippancy* about placing novice nurses in the ED without adequate experience and formal educational supports, even though the staff had fought for these resources to support the provision of safe patient care. The manager had informed Mel: '*…they [novice nurses]…did their final practicum with us so they're fine, they know what they're doing, and they can work independently in emergency.*' Educational supports the staff had pursued for newly hired RNs include *an orientation program…multiple buddy shifts…some learning with [the] CNE and…a big checklist of where…they're at.* Moreover, Mel highlighted that *the novice nurses themselves [had been] …expressing…discomfort and hesitancy about working…independently…and some of the senior nurses [had been stating]* '*…this is now my partner…this junior nurse who doesn't have the experience.*' Consequently, Mel questioned: '*…are those safe situations?*'

For all participants, accessing optimal on-site human resources has also been influenced by who on the care team can most effectively and efficiently support their just-in-time learning

152

needs. As follows are Mickey's (expert RN) thinking processes when choosing a go-to resource:

…let's say we have an oncology patient come into the ER…, I don't hesitate, I go down to our cancer clinic. Or if I'm having…trouble accessing the port for whatever reason…I…go to…who I think will help me. …if we have a patient, I have questions about…I'll go find our anesthesiologist…in the OR and just pick their brain. So, a lot of my learning is…in-the-moment learning from colleagues because [they are] my greatest resource.

Likewise, Mel (proficient to expert RN) and Shelly (proficient RN) both deemed that experienced teammates including physicians have been their go-to resources for quick just-in-time learning support during high acuity scenarios. Mel explained: *…it…goes back to…who's around you? …if I have somebody who…has experience, then I will often ask them first…it depends…we definitely have a variety of physicians…so, it...depends…on what their capabilities are.* Shelly stated: *…if it's something more acute or urgent…you're…going to the doctor more.*

Similarly, Lucy (expert RN) has accessed experienced human resources first as opposed to online resources due to poor Wi-Fi. She claimed: *It boils down to who's around because if there's a…senior person around, or there's a doctor around I'm…asking them before I'm going to the computer that takes time to log on, cause the Wi-Fi sucks.* Lucy also described how the people she works with feel comfortable enough to ask questions or offer opinions within the collaborative team: *We support each other…whether it's the doctors asking the nurses' opinions or the nurses…go to the doctors and ask them questions and give…their opinions. So, it's very much a two-way street…none of us do anything in isolation.*

Quite the opposite, three participants contended that physicians had not always been an optimal go-to learning resource. Shelly purported that physician support for collaborating about just-in-time learning activities was often *related to their personality.* Their support ranged from suboptimal to adequate quality as she disclosed next: *…some doctors…didn't have time for what*

you had to say. And some were more willing to work together.

Equally, Jane (expert RN) contended that she had seldom been accessing the physicians with whom she works because of the increased number of locums practicing at her site. She justified this choice as follows: *Our docs are good don't get me wrong, but…right now we're in a doctor shortage in XXX. We have quite a few locums.* Her concern was that these physicians could *…order what to do but they [did not] know how to do it.* In these situations, she confided that *…they're not the best person to ask how fast to give something.* In turn, she has frequently been their learning resource as imparted next: *…we had somebody come in with hyponatremia and the doctor wanted us to push concentrated saline. I was like, 'no, no we can't be doing that because that can cause some problems.' So then, I got the monographs.*

Sometimes the best support for participants' just-in-time learning was an experienced LPN or HCA, or a novice RN. During urgent, complicated situations of multiple unknowns, Mickey (expert RN) explained how an LPN with ED experience has been an optimal just-in-time learning resource for her because of how she has broken down these situations into their parts and asked questions of the team. She stated: *…a younger LPN [with] a ton of ER experience… [has been]…a really…valuable resource because she always goes differential…where my brain doesn't necessarily. She does, and she talks it out, and she'll be like, 'but what about this?'*

Likewise for Ric (competent RN), an HCA was her quick go-to just-in-time learning resource when she needed to alert the staff about a patient who was coding and needed resuscitation, a chaotic situation in which she lacked the knowledge needed to effectively call a code in that rural hospital workplace. She made clear the optimal learning support this way: *…luckily, there was a very experienced healthcare aide in the hallway [who stated] you can…just dial #66 on the room phone and it'll actually…intercom the entire hospital.*

Mel (proficient to expert RN) and Choco (expert RN) expressed that novice nurses have

154

sometimes been their best go-to resources. For Mel, they have assisted her in navigating the AHS Insite portal as imparted next: *So…I'm not super techy, and…I…find…the newer novice nurses …use Insite a lot. And so, I've learned a little bit from them about…where to access information.* For Choco, a *new graduate* was her *go-to* resource for learning how to manage a *Pleurex drain.* She stated: *…I'm like, 'would you show me how?'…she…graduated…three months ago and… she is my go-to on these things, because she worked on a floor that had them [Pleurex drains].*

Four participants indicated that the on-site pharmacist (even when off duty) has been their optimal go-to resource when administering unknown or rarely administered medications. Jane (expert RN) admitted: *I've frequently called our pharmacist after hours; …we had somebody who I had to get a Mannitol drip ready for, which I've never done before so I called… after hours.* Shelly claimed that, when necessary, she would telephone the on-site pharmacist for help if it was a day shift but that their availability was *based on the time of day* and that during the *night or a holiday, they may not be available.* When unsure of a medication or in a hurry during emergency situations, Mickey and Choco (expert RNs) identified that they have called the on-site pharmacist for just-in-time learning support. Mickey contended: *…if there's something… I…don't know…I just call…and ask them…what can we do?* Choco stated: *I called the pharmacist immediately and said 'how much [Ventolin] to how much [Saline]?*

Mickey communicated that she does not hesitate to call laboratory personnel to optimally support her ability to provide capable, safe patient care during high acuity scenarios. She made clear one of these scenarios as follows: *…we had a baby…they [urban physicians] wanted a lactate on. I'm like 'can we even do this on a newborn?' [The lab personnel responded] 'no, we can't, we don't run them here.'* For some participants, learning support was accessed from CNEs who were seldom on-site.

Seldom On-Site. In seven of the 12 rural hospitals in this study, the CNEs were seldom

on-site and were identified as covering more than one rural hospital and thus, minimally available to support the just-in-time learning of staff. In these facilities, the participants were expected to use their own accountability and means to fulfill both their just-in-time and formal continuing education needs.

Mel articulated the suboptimal learning support this way: *…in-the-moment…if we had a situation…she's not always available. …she…does the basic CPR [Cardiopulmonary Resuscitation] and then…we're responsible for…our own certifications. And that's only…if we take…ownership of doing that. …so not everybody in our department has ACLS [Advanced Cardiac Life Support].* Nonetheless, Mel did acknowledge that the CNE has tried to support the informal learning (Marsick & Watkins, 1990/2015) of staff by sending out learning resources via AHS email and Zoom, and formal continuing education by teaching new hires the Emergency Nursing Provincial Education Program (ENPEP). She claimed: *…she does send out emails with some resources in [them], …for instance…how to use our Kangaroo pump, or…the Lifepak. …I know she does…the…rural emergency nurse program.*

Similarly, Daisy (a proficient RN who typically works night shift) had never seen her CNE but appreciated her attempt to provide the staff with adequate informal continuing education resources to support their learning. However, the mode of supplying these resources through AHS email has been *frustrating* for Daisy due to computer challenges and lack of time to access them. She contended: *…she sends this stuff [educational resources] out via our AHS email. …You can never access that AHS email on the work computer because you have to log out of the system…and…log in as yourself and it won't let you. It's very frustrating, it's either non-accessible or it's very confusing.* In addition, she lamented that *there's no time to sit on a computer and look up all these things. We're short staffed every single shift…we don't get breaks.* She then conveyed that she preferred the way learning resources were previously

provided in hardcopy format because she could access them when she had a moment: …*I can put [them] in front of myself as I have my snack and I can read [them] as I'm eating.*

Ned (expert RN) made clear her feelings about the suboptimal CNE support in the facility in which she works as '*I don't like it. I was in [their] role and I know what it's like having two or three or four hospitals.*' She then confided how she has tried to encourage the CNE to best support the staff: *I have chatted about 'the importance of being out on the unit and having staff see you. They're not going to come look for you. You have to be out there. You have to be looking for these just-in-time learning moments. You have to be…available.*'

Quite the opposite, Chantal (competent RN) described the CNE responsible for her rural hospital workplace as *very good* even though she had only been available *once or twice a week.* During a complex, emergent situation with a peer in the ED, the CNE happened to be on-site to support them in their experiential just-in-time learning about a medication they had infrequently administered. Chantal explained that optimal learning support: *Our educator was in the building, so we called her and we're like 'get down to emerg we're giving Alteplase.' So, she came down and…helped, walked me and this other nurse [through the protocol].* I elaborate on the actions of this process in the subtheme *Learning with Others*. Sometimes the best resource for participants to access for just-in-time learning support was an on- or off-site specialty resource.

On- or Off-Site Specialty Resources. These resources varied and included ED staff; RNs on urban units; home care RNs; an urban CNE; an urban specialty team; RAAPID physicians, flight paramedics, or STARS members; urban pharmacists; telehealth resources; and the Poison and Drug Information Service (PADIS).

In one rural hospital workplace in which the medical unit is staffed separately from the ED, the staff on the unit have accessed the RNs in the ED when they have needed some just-in-time experiential learning support to do an infrequently performed skill. Tina conveyed how this

type of adequate learning support has unfolded: *…we don't deal with a lot of ports on the unit. So sometimes when they [patients with ports] come in, we might have someone [from the ED] come down… to…walk us through it again, because we haven't done one in a while.*

For four other participants, experts in urban units have been their go-to resources in-the-moment. Lucy (expert RN) described how collaborating as a team supported accessing the best resource to enable learning how to appropriately care for a palliative patient discharged from an urban oncology unit and needing specialty care. She stated: *So, my discharge planner… homecare nurse and…occupational therapy person…were brainstorming…and it was one person knew this other person who'd be able to help us. So…they organized this meeting, and we all went in together.* In this non-urgent, complicated situation, the team connected virtually via Zoom with an expert RN from that urban specialty, who provided them with optimal learning support through directing them step-by-step with how to perform the procedure. I introduce this new term as directed learning in the subtheme *Following Step-By-Step*.

Similarly, Shelly (proficient RN) and Ned (expert RN) both explained how they have telephoned staff in urban units to acquire optimal and timely information to support learning the information needed to provide safe patient care. Shelly commented: *…I know…all the units that are at the XXX…so, I actually could call…and sometimes we'd ask them about…a chest tube connector, or…something like that.* As Ned said: *…My first thought [was] that I need to phone XXX to talk to one of their emergency nurses…or…ICU [intensive care unit] nurses. …So, I called XXX and they gave me instantaneous information.*

For one participant, accessing an urban CNE or specialty team has been influenced by the *fluid, constantly revolving reality* of fluctuating skill sets of the rural team, which have been related to nurse retention issues within the facility. Ashley (expert RN) explained these challenges this way: *For us here…sometimes you have a great wound care team, sometimes you*

don't. When the local team has lacked the knowledge necessary to perform the needed patient care, Ashley has readily accessed an urban CNE or wound care team for optimal learning support, as imparted next: *I have been known to…contact a clinical nurse educator on a previous unit and say, 'hey…we've got this person here, what were you doing for them? What do you suggest we do…?' …Maybe it was a dressing change…I'll contact the wound care team in the city to…comment on what to do next.*

In contrast, specialty nurses on urban units have not always been receptive to Jane (expert RN) and her requests for just-in-time learning support. She made clear one of these suboptimal situations this way: *I called XXX and…said '…can I…speak with a nurse…about what kind of heparin I use to flush?' …the nurse I spoke with was kind of a bag about it. …she said, '…that's just always what we do…that's how we give it, I don't know where it's written.'* In return, Jane amusingly replied to the RN: *'… okay, cool. So…what's your first and last name? So, I can write that on my doctor's order…give this as per XXX nurse Jane Doe.'*

For two participants, home care RNs have been their go-to resources for optimally supporting how to complete infrequently performed non-urgent skills. Mel (proficient to expert RN) has accessed them to assist her in learning how to correctly manage an IVAD as previously discussed in the *Infrequently Performed Tasks* subtheme. Likewise, Tina (competent RN) has accessed the off-site home care RNs to problem solve how to manage wound dressings for patients from home care who have been admitted to the medical unit in the hospital. She expressed: *…we get…clients in and we're not sure what [home care] is doing with their dressing – we've definitely…called home care to discuss the dressing.*

Sometimes optimal just-in-time learning supports have been RAAPID physicians via telephone. Chantal (competent RN) explained how she has capitalized on accessing these experts as go-to resources: *I have had the opportunity…to be online with RAAPID and…have my own*

159

conversation with those doctors. If possible, they take the time to teach…what you're looking for, what lab values are important, what abnormal signs and labs are expected…. In addition, she identified that *…when…flight paramedics or STARS [teams] come in, [she] asks...questions about the scenario when it's appropriate.*

Conversely, Lucy (expert RN) highlighted that accessing off-site specialty resources can at times be *painful [and] time-consuming*. Thus, the staff in the facility in which she works often collaborate as a local team to choose which optimal human resources to access. She described these situations: *So…what usually happens is…we're trying to learn what we're supposed to do for these patients. We're talking as a team and…calling in…our resources, whether that's another doctor…our site lead…or a more experienced nurse.*

Three participants indicated that pharmacists in other rural hospitals or urban hospitals have been optimal support for their just-in-time learning after hours when needing to clarify information about medications or having to administer rare medications. Tina (advanced beginner RN) contended: *…I can always call…the [XXX] pharmacy to clarify stuff* and Jane stated: *I've called XXX hospital…to speak with their pharmacists to run Heparin drips.* Likewise, Ric (competent RN) claimed: *…we have this 24 hour…on call pharmacy service from the city and I had called about a…very rare drug. And it was patient provided or…the drug had come with them from the city. …But it was a weekend, and it was a night.*

Telehealth resources were identified as optimal just-in-time learning support for Shelly (proficient RN) during emergent, complex situations. She deemed: *…having a trauma specialist …on the phone…during…a complex situation…it's invaluable for the rural nurses.*

Another optimal telephone resource for one participant has been PADIS. During an emergent, complex situation, Chantal (competent RN) telephoned PADIS for learning support. They immediately pointed out the priorities needed to provide safe patient care and offered

follow up support. She explained: *…they were super helpful and quick…they knew I had to get back to [the patient] so they…rattled off…priorities. …they're like…if you don't call me in 45 minutes, we'll call you. And they did.* Although participants readily accessed human resources for learning support, they also pointed out the need to frequently access online resources.

Online Resources

All participants had accessed and examined an array of online resources to support their tacit and deliberative just-in-time learning activities. Although not an exhaustive list, online resources included a variety of evidence-based procedural, policy, and informational resources located within AHS Connect Care and Insite portals or CH Insite portals, as well as applications on personal digital assistants (PDAs) and information found on Google.

Connect Care. Participants who had access to Connect Care suggested that, while it had been a massive learning curve, there have been many benefits to multiple resources being available at their fingertips. However, those who did not and were still using AHS Insite often found accessing online information slow, cumbersome, and confusing due to slow computers, poor Wi-Fi, and the mix of current and outdated information found within the provided portals. For some, these challenges left them resorting to using their own PDAs and data or hardcopy resources to access timely information.

For one participant, the implementation of Connect Care has disrupted her ability to use her tacit knowledge to quickly access online resources like she did in the previous AHS Insite system. Although Ashley (expert RN) indicated that Connect Care will *be a great spot …[to]… find…policies and information more easily*, she has also found it challenging to rapidly access its learning resources, as she imparted next: *…I was working with a physician, and we were trying to figure out drug interactions and trying to find...Lexicomp and the…parenteral monographs. And one of the limitations…was [not] knowing how to use them. Whereas before Connect*

Care…, I always knew exactly where to find all that information.

In contrast Tess (proficient to expert RN), who has become adept at navigating Connect Care, contended that it has made *a huge difference* in optimally supporting her just-in-time learning activities because of the type of available resources it houses and how quickly they can be accessed. The online resources she has found most useful in Connect Care have been *Lippincott Procedures/Advisor or…for any IV medications, there's Lexicomp and the parenteral manual.* She deemed that these *evidence-based* resources can be accessed quickly in only *a few clicks* during high acuity scenarios to provide *a refresher* on how to do infrequently performed tasks. She likes *Lippincott Procedures* because it walks the learner through a procedure *step-by-step* using *very clear, straightforward instructions…[with]…visuals, which for [her] are important* because she is a *visual learner.* Similarly, Mel likes having *access to…the patient's whole chart* in Connect Care, which optimally supports knowing their health care trajectory and prior encounters in the system, information previously difficult to obtain in-the-moment.

Another participant who had not yet been introduced to Connect Care was *looking forward* to its implementation (unlike some of her peers) because online learning resources will all *be in one spot*, thereby requiring little searching. Chantal (competent RN) conveyed her excitement this way: *Well, I'm very much looking forward to Connect Care…I know lots of rural nurses are quite scared of it. I'm so excited because I can't wait for everything to be in one spot. And if I want to pull up a protocol I can and it's all there for me. I'm not searching for it.*

AHS Insite. All participants who worked with AHS acknowledged the need to often access AHS Insite to support their just-in-time learning activities. However, their perceptions of its quality varied between suboptimal and adequate.

For Mel (proficient RN), accessing online information via AHS Insite has adequately supported finding information to support completing non-urgent, simple tasks that she has not

performed in a long time. She indicated its usefulness this way: *…perhaps you haven't used a certain splint for a long time. Could be six months or a year and so you have to…review any kind of policy that you might have…using [a] computer looking at [it] on Insite.*

In contrast, Shelly (proficient RN) deemed that while online resources have been *key [and] essential* to supporting her just-in-time learning activities, accessing them in AHS Insite has been slow and cumbersome requiring too many clicks to reach information. She had previously worked on an urban specialty unit in which the CNE had provided a quick-access icon on the computer desktop for the specialty care they provided. She explained her thoughts about the sub-optimal supports of Insite versus the optimal support of desktop icons: *…when you go into Insite…to pull up…a monograph or…IV medication…you have to…go into Insite, go into pharmacy, go into parenteral manual…just to get to it was so many clicks…it would…be better …if you just had icons that would take you directly to what you needed to get to.*

Moreover, Tina (competent RN) and Lucy (expert RN) both complained that accessing specific protocols on AHS Insite has been slow and challenging. Tina stated: *…you can look up keywords but finding this…specific protocol for your hospital…that's a lot harder…and can take a lot longer.* Lucy's concern was that Insite contained a multitude of outdated policies and procedures that inhibited her ability to quickly access appropriate, current resources to effectively support her just-in-time learning. She lamented: *…when you go into the policy and procedure manual, there's…policies from the early 2000s from health regions that don't…exist anymore. '…why is all of that nonsense on there?' And, when it's been replaced by a new policy, 'why don't I just have the most current up-to-date policy?'*

For Jane (expert RN) and Daisy (proficient RN), *frustration* with Wi-Fi issues have led them to use their own PDAs and a variety of purchased *apps [applications]* as their preferred routes for accessing online resources to adequately support practicing capably and safely. Often

Daisy did not have access to the work computer, which then required her to use her *own phone, which [she claimed] can work or cannot work because the Wi-Fi kicks you out. So, what should take you a minute or two is now taking…a lot longer.* She then confided that these challenges left her accessing Google to obtain timely information, which she admitted is not best practice: *…I just Google and I…look up a reputable website…look up the medication that I need to give. …But if you're having to rely on Googling something because you can't access or can't find whatever, …I don't think it's best practice.* Likewise, Lucy (expert RN) has also resorted to using her own PDA to access Google because of the difficulty in finding timely resources in AHS Insite. She noted: *…unless you've got the icon saved on the computer, it's sometimes a little difficult. Whereas…you can just go to your cell phone and Google what you wanna know.* She too, admitted that you have *to take into account it is Google, so it's not necessarily true.*

Chantal (competent RN) contended that learning resources need to be *very quick and easy to use* especially in high acuity situations; not *too wordy or too complex…or that take time to read…it's too much time.* She indicated that she would *rather just talk to a nurse or doctor, and…read up on it after.* She did, however, recommend the *CTAS app* as an optimal go-to resource to support just-in-time learning when triaging in the ED.

For two participants, the AHS cerebral vascular accident (CVA) and pediatric diabetic ketoacidosis (DKA) protocols used to provide care for complex patients have been too confusing and thereby sub-optimally supportive. These protocols have caused fear and overwhelm to the point where one participant and her peer removed four pages from the CVA protocol to effectively provide patient care during an emergent, time sensitive situation. As follows, Chantal (competent RN) made clear her frustration and concern when dealing with the wordy and lengthy CVA protocol: *…the stroke protocol is probably the biggest challenge for the way it was worded. And it's six pages. …At one point we were ripping pages out. …once we removed what*

164

was redundant and…not particular to our situation, it was better, we had two pages to follow.

For Jane (expert RN) and an experienced peer, performing tasks from the pediatric DKA protocol have occurred infrequently. She described how the protocol was suboptimal because it caused them fear due to its complexity and lack of clarity: *…it's been a while since I've had a peds [pediatric] DKA come in, but I know the last one [who] came in, it was me and…an RN with 40 years [of] experience…we were scared. We had the protocol, but it was very confusing.* Although many just-in-time learning resources can be found online, some participants have preferred to use hardcopy resources because they have been quicker to access during emergent, complex situations affording little time for learning.

Hardcopy Resources

The on-site hardcopy resources participants have accessed include evidence-based procedures, protocols, policies, information located in binders, textbooks, and flip charts. However, Chantal pointed out that with the implementation of Connect Care, the staff in the hospital in which she works have been informed by their manager that all hardcopy resources will soon become obsolete. She claimed: *We have hard copies for some [protocols], some are online. …We just got new management. I know that once Connect Care comes nothing will be paper. …She likes that everything's in a folder online…and then it's always up to date.* Jane indicated that she too has appreciated using hardcopy resources but has countered their outdate issue this way: *…if I have…a[n]…infusion, I'll look up the monograph and…print it off that day, but then you can't keep it you…just…shred it at the end of the shift in case updates are made.*

Shelly (proficient RN) has also been fond of having quick access to hardcopy *ACLS algorithms on a flip chart* located in the ED trauma room. She explained the complexity of some scenarios as *there's so much going on with…a cardiac arrest or an emergency setting…and… [with] so little resources and people.* For her, the flipcharts have provided optimal learning

support by reducing her need to think about how to sequence interventions, which then has enabled her to focus on other emergent tasks. She claimed: *…it took that off your plate in your head…you could… focus on the tasks…you were doing. …it was…right there… holding that information…an easel where you flip over the paper…big enough for everyone to see.*

Likewise, when providing care for a patient experiencing a high acuity scenario such as chest pain, Ned (expert RN) identified how they use optimally supportive province-wide standardized resources that are available both online and in hardcopy, which they order in. She stated: *…they're online, but we have ordered them in [as hardcopies] from [the AHS] data group. They are in our clinical knowledge topics, or CKTs. They're the order sets that are being used throughout Alberta Health Services. So, no matter where you go, you should be familiar with this type of treatment.* She also admitted that she is often the person who keeps the staff updated about any changes, as well as ensures that hardcopies are kept current: *So primarily, if I know that a protocol has been changed, then I'll go back, and…change all the hard copies…to make sure that they're current.*

Two other participants indicated that hardcopy cheat sheets for administering medications or engaging in infrequently performed tasks have been optimal just-in-time learning support when lack of time has been an influencing factor. Chantal (competent RN) explained: *…we have cheat sheets…[as a] quick resource; what drug, can it be given direct IV, and how long? I'd rather go to that cheat sheet and find the answer than scroll through the parenteral manual…if it's…a medication I have to give within a couple of minutes.* Equally, Shelly (proficient RN) conveyed the advantages and optimal just-in-time support of using disposable cheat sheets generated from telephone calls to urban specialty staff, information retrieved from AHS Insite, or urban post-operative procedural orders: *Sometimes you…phone in and describe something and…they [urban specialty staff]…tell you…verbally about it. And you…make…a*

little sheet. …sometimes it would be…from Insite or…they had surgery in XXX. And then I would make a copy of it, write copy on it, and put it on the Kardex. She made clear their use as follows: *…it's just…a quick, oh, hey, I remember this thing, or I don't know about this, I'm going to read this…you just chuck it after.*

Nonetheless, Daisy emphasized that she has *given up* using the hardcopy resources supplied in her workplace due to suboptimal, outdated protocols (which she had learned about from a new graduate). She lamented: *…I've…had a new graduate say, 'oh, that's actually not the way we're taught anymore.' …so, after that…I…went to a few other nurses, and…nobody knew of this so-called new way of doing whatever it was…so I have given up on the book.* Next, I address the participants' perceptions of how they manage when they are the resource.

How Do I Manage When I Am the Resource?

Participants of varying levels of expertise ranging from competent to expert described being expected to act as just-in-time learning resources for others. In some facilities the loss of expert RNs to retirement or job changes has caused the subsequent need for less experienced RNs to be just-in-time learning support for their peers, while in other facilities the lack of an on-site and present CNE has contributed to this need.

Tina (competent RN) explained the *daunting* and unexpected role of being a learning resource as follows: *…now that I've been in nursing for a few years, I find that there are situations where…I'm the more experienced one. So then…people are coming to me [with] questions….'* She then indicated that she tries to *help them figure out an answer.*

Similarly, Daisy (proficient RN) and Mel (proficient to expert RN) both expressed concern about the need to support less experienced RNs with their just-in-time learning. Daisy, who works many night shifts during which the physician is off-site and thus not available to ask for help, indicated that she is worried about being the senior staff and who she might access for

167

learning support. She stated: *And all the senior nurses are going out the door faster than you can shake a stick at. And…now I'm going to be the senior nurse. I'm not going to have anybody to ask because there's no doc on night shift. Doctors don't stick around, like it's you and a few other nurses.* For Mel, while teamwork has typically made her just-in-time learning activities less challenging, *working with a novice nurse, who requires more support…and [is] asking…a lot of questions…sometimes makes it more challenging as a more senior nurse.* She identified that mentoring inexperienced staff is a *hard balance* and that, while she has wanted to *support new nurses* and *help to educate new staff*, sometimes *internally* she feels *overwhelmed.*

Even though some rural hospital workplaces had more than one CNE on-site, there have been times when these individuals did not possess the expertise needed to support the specialty learning needed for areas like the ED. In these situations, the RNs with experience have been expected to provide their less experienced peers with just-in-time experiential educational support. Tess (proficient to expert RN) explicated this type of suboptimal learning this way:

 So, we've got two [CNEs]…, one mainly for…inpatient acute care; we did have one before that…for the emergency and the OR. But…the person who's replaced her…doesn't have emergency experience…so we don't really have…a CNE readily available to us in the emergency with…relevant experience to…help us with…the more specific skills. …So, a lot of that tends to fall…on the more experienced…nurses…to help support the rest of the department.

Tess further explained the difference between working with a strong team member such as an *expert practitioner* during a high acuity scenario, as compared to someone less experienced. In the former case, both individuals readily anticipate what procedures need to be performed and in what sequence, which requires little communication or learning. She made clear these actions as follows: *If I'm with…an expert practitioner, there tends to be…less…to clarify because we've gone through that process a lot either individually or together. …there is*

168

communication, but…less of it because we tend to know what…needs to be done, and it…gets automatically done. Whereas in the latter case with an inexperienced peer, Tess claimed: *…there tends to be a lot of having to take…a leadership role to delegate, and if possible, try to explain the rationale or the plan, so that…so we can efficiently address whatever the issue at hand is.*

Given the suboptimal support of a CNE in the facility in which Ned (expert RN) works, she has become a CRN for the staff, providing them with optimal support for their just-in-time learning activities. She conveyed: *There is not a day that I don't get asked something. They will call me at three in the morning, they will call me Sunday night, it doesn't matter. I always tell them I'm available if they have any questions.* She deemed that their needs are typically related to locating information or equipment: *I…know the lack of resources in…rural hospitals. They have to have somebody they can access quickly if they can't find what they're looking for, and primarily that's what it is about, it's not…what do you do? It's where is it?*

Participants who are expert RNs identified that they often are the learning resource for their less experienced peers. To be as effective as possible, they first ensure knowing the strengths of the team members with whom they are working, which enables accessing optimal go-to resources in-the-moment. Ned (expert RN) highlighted that, in the facility in which she works, they deliberately assess the strengths of the team and assign roles when coming on shift. She stated: *When we come on shift, we look at the strengths of our staff…the strength of the team. We know them well because we're a small team. We…pull from the unit if we need…if I had a code, it wouldn't just be me and a new grad, it would be more.* Ned then described how she decides who to quickly access and assign a role to: *So, if I'm working with XXX…I know her strength is NICU [neonatal intensive care unit]. So, if I have a mum going to deliver a preterm baby…I want XXX in there.* Choco (expert RN) highlighted the importance of being clear and concise when explaining the roles of the team: *…the person [who]…comes from the floor, I need*

169

to be concise and specific and then tell them their role so they will feel comfortable with it.

Ned (expert RN) also pointed out that some new RNs may not admit when they are uncomfortable with or unsure of how to fulfill their assigned role, which requires experienced staff *anticipating what people need and…can do for the team.* She claimed: *…sometimes they're assigned a role… they're not…comfortable with and if they're new, they're not…comfortable with…saying, 'hey…I don't know if I can do that.' Or they're excited because somebody's given them the airway, but they've never…seen a code before and…never bagged anyone before.*

Ashley (expert RN) acknowledged that they do not assign code teams in the facility in which she works because of the way it is staffed and the potential for team members to be off-site during their breaks. She explained: *You can't say only you two are gonna show up to a code because if those two individuals happen to be on a lunch break, one of whom ran home to let the dog out…, you don't have a code team.* However, like Ned, she also stressed the significance of knowing the strengths of everyone working in the hospital during a given shift to know who a go-to resource might be for a task, code, or learning situation. She contended that they *…informally have that…code team.* Similarly, Choco (expert RN) identified that *as a rural nurse…the number one thing that [she does] is…know who's in the building.* She stated: *I know who I can call…I know what paramedics are on if I'm in emerg…because…stuff happens.*

When participants who are expert RNs have engaged in providing their less experienced peers with learning support, it has required using a combination of their affective, cognitive, and psychomotor skills, which include remaining calm, engaging in mindfulness, taking deep breaths, prioritizing, reflecting on previous experience, stepping back, focusing on the situation, looking at the big picture, relying on their intuition, and stepping in. As follows, Ashley poignantly described her actions and thoughts when attending a high acuity, chaotic situation:

> *… you never run into a scenario that…appears to be an emergent situation. …I walk*

briskly, I walk with purpose…but I walk so when I walk in my heart rate is not overly elevated, I am not huffing and puffing or out of breath. …In the process of walking there, I do a little bit of mindfulness, I take a few deep breaths. …I also do some thought about what needs to be done… And then when you walk in, you look around and you try to see the big picture, as opposed to individual…pictures or…tasks…because oftentimes, there's lots and lots of things going on.

Conversely, Ned (expert RN) emphasized the importance of acknowledging the contributions of all team members, no matter their level of expertise, to support strengthening the team and managing the complexity of a situation. She explained her thoughts this way: *…in a situation where we're all stumbling…we're bouncing ideas off each other…it's not…we look for the expertise in the room, we look for anybody on the team…and it's quite often the person standing back, documenting…comes up to say, 'hey, what about this?' …we acknowledge…that.*

Lucy (expert RN) expressed that, given the unknowns of rural nursing because *…you never know… if there's going to be something that you've never experienced or dealt with before*, that *it's hard* being *one of the…the senior people* who is *doing a lot of teaching and directing people to the right resources.* Similarly, Mickey (expert RN) indicated that a high acuity, chaotic situation had been less than ideal because she had been working with an undergraduate nurse and two physicians new to the rural hospital workplace when caring for two maternity patients in active labor. To navigate this chaotic situation, she asked herself the following questions: *'What do we have control over? And what do we not? What can we do for these two moms [who] are gonna have babies…[without] a whole lot of time and resources?'*

Mickey then decided to shift her support for the undergraduate nurse from that of educator to one of mentor through trusting in her inexperienced colleagues' abilities and helping her to realize that she could manage one of the high acuity scenarios. Mickey made clear her thinking this way: *…I…had to empower her…to be independent and that she could do it and…I*

was there as a backup. …changing that role from…teacher student and then slip it into…trust. In addition, Mickey relied on effective communication to keep the situation safe. She stated to the undergraduate nurse: '*…we're gonna…keep checking these babies [and]…be sure we're… talking to each other. We're gonna leave the doors open, and…yell for each other when we need each other.' And that was…the plan and fully chaos.*

Some rural hospital workplaces have been enhancing their staffing ratios with travel RNs. Often these RNs tend to be experienced in managing high acuity scenarios in the ED, which has made them good support for the local team. Jane commented: *…most of the travel nurses…it's just basically getting them the lay of the land. But the ones we've had are definitely more familiar with traumas.* Nonetheless, Jane (an expert RN) also emphasized that they can be *naïve* to the lack of resources in rural facilities and why certain decisions must be made. She explained: *…we had a [patient with a] head injury…and we couldn't get an ambulance. So, the doctor cleared the family member to drive the patient and the travel nurse was…'this shouldn't happen?'* Jane then described the just-in-time teaching she engaged in with the travel RN. She told her: *'this patient won't go for the scan if they don't go by private vehicle. …this isn't ideal but otherwise, the scan isn't getting done.'*

Once participants have chosen their just-in-time learning resource/s, they then engage in learning actions to obtain the knowledge needed to provide patient care capably and safely. I now explicate these activities in Theme 6: *What Are My Learning Actions?*

Theme 6: What Are My Learning Actions?

Theme six (see Figure 14) resembles steps four through seven of Watkins and Marsick's (2021) adapted model of informal and incidental learning: acquire required knowledge and skills, implement solutions, assess consequences, extract lessons learned/plan next steps, and reframe the context. In this theme, participants engaged in a variety of learning actions I have interpreted

172

as *Learning by Myself*, *Learning with Others*, *Learning from Others*, and *Learning Pre-/Post-Just-In-Time*. Again, I used Eraut's (2000) typology of modes of cognition and (2000) typology of informal learning to interpret participants' thinking processes and types of learning.

Figure 14

Theme 6: What Are My Learning Actions?
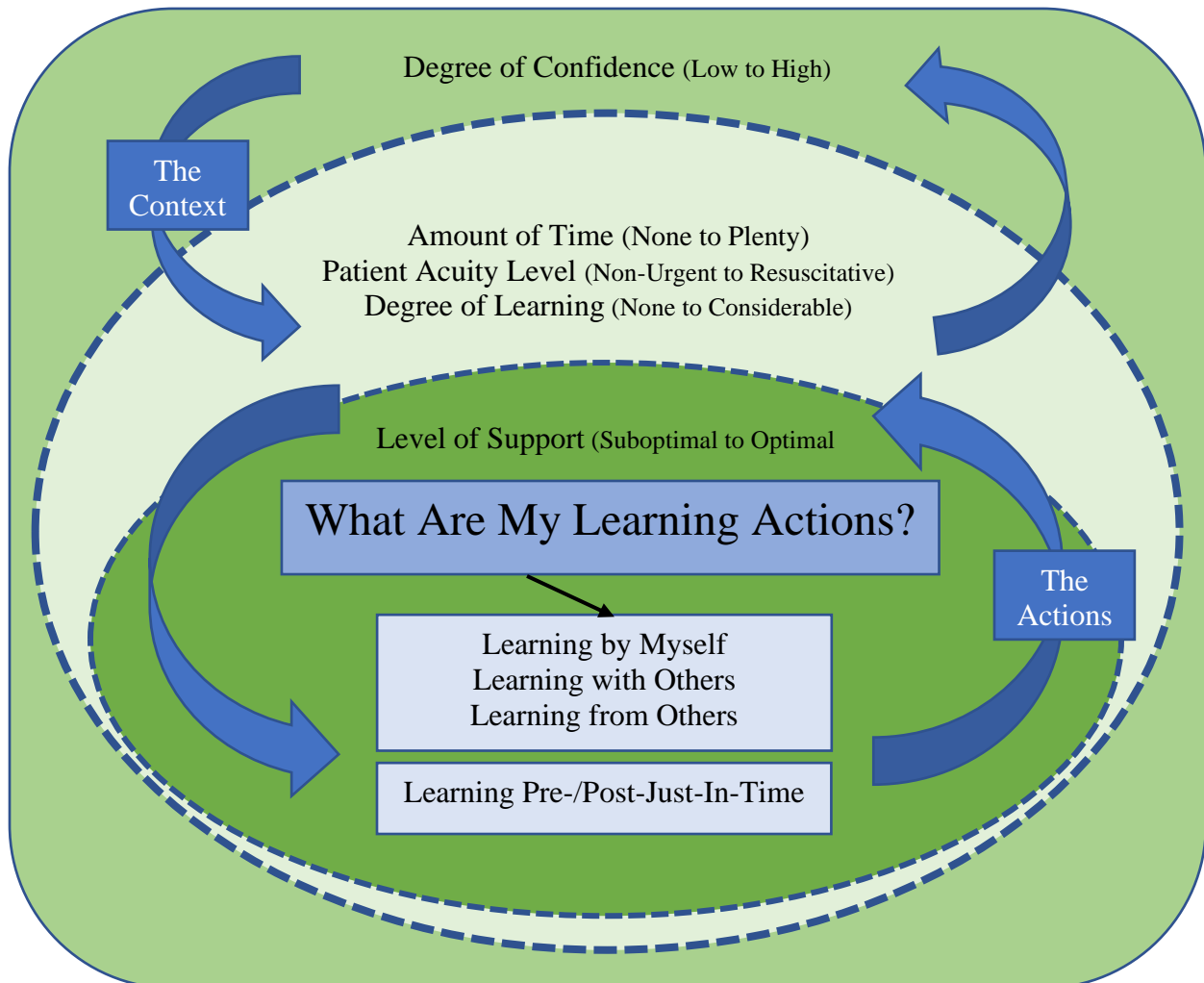
Learning By Myself

To acquire just-in-time knowledge and skills, implement solutions, assess the consequences of their learning, and reframe the context, all participants acknowledged the need to engage in learning by themselves on any given shift. To do so, they used their intuitive

cognition to recognize when they did not possess the previous knowledge or experience needed

to manage a patient care scenario or contextual situation; their analytic cognition to critically

interpret the learning resources they were accessing; and deliberative cognition to generate a

plan, make decisions, and solve problems.

All participants communicated that they have used online or hardcopy resources when

engaging in just-in-time learning by themselves. These learning actions were influenced by the

amount of time available to engage in just-in-time learning, which was dictated by the situation

(ranging from simple to chaotic) and their patient's acuity level (ranging from non-urgent to

resuscitative). Non-urgent, simple situations allowed participants plenty of time to engage in tacit

and deliberative learning by themselves, whereas those of greater acuity and complexity often

required engaging in deliberative learning with others, or in reactive learning by themselves. For

less experienced participants, their low degree of confidence in what they had learned by

themselves led them to ask more experienced RNs to validate their ideas as a means of assessing

the consequences of their learning, extracting lessons learned, and planning next steps.

Ric (competent RN) has used a set approach to engage in just-in-time learning during

simple to complicated situations of unknowns that have afforded considerable time for learning.

She begins with using her analytic cognition to compare her previous knowledge to the evidence-

based information she accesses from AHS Insite/Lippincott online resources. She may even look

for a video because she is *more of a visual learner than…a reader.* She critically thinks through

previously learned foundational principles and what might work best in the current situation. If

these just-in-time learning actions do not effectively support her confidence in what she has

learned and her skill set, she will then use her deliberative cognition to ask for learning support

from a staff peer or CNE. This latter step involves assessing the consequences of her learning,

extracting lessons learned, and planning next steps, while also supporting her confidence in the

patient care she provides. As follows, she described her thinking processes:

...before I go to an educator if I have the time, I will go and look up something on Insite or Lippincott. So typically, I'll try to find my own resources first, and then that way I have something to go off...if I get questioned about it by an educator. And then I try to merge the resources that I've accumulated and then...go off...that. I use a little bit of my instinct as well. So, like, what would work best in this scenario...because I don't think we can always follow proper textbook practice, just given how a scenario can really fluctuate. So, you...have to do a little bit of critical thinking in-the-moment, and as long as you're following these foundational principles, you can figure most things out.

Daisy (proficient RN) has confidently used reflective deliberation to make sense of and evaluate her experience with complex or chaotic situations as she has recognized that these thoughts then become *tangible memories* to be used to engage in reactive just-in-time learning when later experiencing similar situations. She stated: *You're like, 'okay, we made it through that. What did I learn from it?' ...So, confidence level...now I've got some things to pull from if this situation happens again because I've been through it, it's more recent than [my] memory.*

During high acuity, chaotic situations when time has been limited, Tess (proficient to expert RN) professed that she has used a combination of her critical thinking and previous experience to guide her nursing practice and to confidently provide safe patient care. She uses a combination of her analytic and deliberative cognitions to think critically and her intuitive cognition to pull knowledge from experience to guide the care she is providing. She expressed:

...those chaotic situations where I might not have the ability,...the time, or the resources to prepare as much, I think that critical thinking and the experiences...really become valuable because [they] end up guiding what you're doing. And that is...based on prior experience, which is what...intuition [is].... I can... extrapolate,...apply, and...piece those different pieces together

to form a…cohesive picture of what I think would end up being the safest…option.

Two participants admitted to sometimes solely relying on their intuition when in high acuity scenarios. When there was little time available to access learning supports during a chaotic situation, Jane (expert RN) was confident enough in her skill set to take risks and rely on her intuitive cognition and reactive learning to provide patient care. As Jane put it, some chaotic situations require *flying by the seat of your pants and making decisions on the fly* due to lack of time and the need to engage in *just in time acting…[being] almost robotic and almost not thinking and just doing and just trusting instinct and trusting gut…sometimes you have to act out of your head and just do.*

Likewise, Mickey (expert RN) acknowledged that she sometimes relies on her *brain* when needing to quickly provide emergent patient care. She described how she has used downtime to learn information/procedures so that she is prepared for high acuity scenarios and complex situations. As follows, she uses her analytic cognition during simple, non-urgent situations to deliberatively learn information, which then supports her confidence in using her intuitive cognition and reactive learning when in an emergent, chaotic situation: *…in those simple times when we do have the time to sit and learn…it gives you the ability to have that experience in your…backpack. You [have] got it with you and then you can access it. [Then]… in…chaotic moments…I just go and I…depend on my brain.*

Learning With Others

For all participants, learning with others in the rural hospital workplace often took place when needing to perform a new or infrequently performed task or procedure. It typically involved accessing an online or hardcopy policy or protocol and working through it with a work peer (i. e. RN, LPN, CNE, or physician) to acquire the needed knowledge and skills to implement solutions. Together they would assess the consequences of their learning, and if

176

needed, reframe the context.

In the subsequent excerpt, Chantal (competent RN), an RN peer, and the CNE engaged in tacit and deliberative learning together when using the AHS protocol for administering a medication they had not previously administered. This normally complicated situation became complex for Chantal due to her lack of knowledge alongside lack of time to engage in the considerable degree of needed just-in-time learning actions, which then slid her down the expertise continuum to that of advanced beginner. However, with the optimal support of learning with the CNE, she was able to acquire the needed knowledge to confidently implement solutions to provide safe patient care. She explicated the situation this way:

The nurse I was working with that day…was a peds [pediatric] nurse, so she felt really out of her comfort zone. …So, it was me, her, and the nurse educator. And we all looked at the protocol, followed the protocol as best we could, discussed critically, [be]cause some of the terms in the protocol…weren't simply worded. Because of door to needle time, we were on a time crunch. We didn't have time to go through the Internet, find what you needed…we had to get to it. …we closely followed the protocol, and it was three of us…feeding off each other.

In a different rural facility, Mickey (expert RN) and her work peers have engaged in reactive and deliberative learning via texting each other when one or more of them is working and the others are off duty. She described their learning actions as follows: *…rural nursing, like we're a pretty tight knit group of people. I mean, we group chat lots of things…if we're at work and we're like 'yeah, I feel like we're just going down the drain', we…text each other.*

Tina (competent RN) has used her tacit knowledge to critique AHS online procedures prior to engaging in deliberative learning with a staff peer to adequately assess the accuracy of her learning and whether she needed to reframe her thoughts. She stated: Once *I have…my own answer, if there's a more experienced nurse [who] I trust, I might pull her to the side and…say*

177

this is what I'm thinking…what are your thoughts?

When needing to perform an infrequently performed task of changing a wound vacuum dressing for a patient (a scenario that afforded plenty of time to learn), Ric (competent RN) engaged in learning with a more experienced RN. They assessed and validated each other's work while also deliberatively learning from each other throughout the process. She described it this way: *…we had this one supply that I wasn't really familiar with, and she was…educating me about the supply that we ended up using. And then I…educated her [about]…an arts and crafts kind of thing [to] put the wound vac together.*

Learning From Others

All participants highlighted the importance of learning from others. Some participants had engaged in just-in-time optimal learning actions supported by a mentor. In these scenarios, they felt highly confident in their learning actions. In other scenarios (ranging from non-urgent to emergent), participants learned from others with optimal step-by-step direction from an expert practitioner or adequate guidance from a peer, which then provided them with a moderate degree of confidence in providing safe patient care.

From A Mentor

Chantal (competent RN) communicated how she had learned a considerable degree of new information just-in-time through collaborating with her mentor about the dangers of administering a *touchy…dangerous* medication to an emergent patient. This situation in the ED was a chaotic one because two high acuity scenarios were occurring simultaneously with only two RNs to manage them; the need to care *for a two-year-old near drowning [patient], who was resuscitated on scene…and…a gentleman having a STEMI [ST elevated myocardial infarction – heart attack].* To add complexity to the situation, the physician was on call and off-site. In the latter scenario, Chantal used her analytic cognition and tacit knowledge to critically analyze and

learn the information about the medication from a monograph, intuitive cognition to reactively compare this scenario to previous similar scenarios she had experienced, and deliberative cognition to learn new, relevant information from her mentor. She then assessed the consequences of her learning, extracted lessons learned, and planned next steps with her mentor for safely implementing patient care. She described the situation as follows:

> *...This is something I learned on that day. ...the senior nurse...said 'the amount of times I've given TNK [Tenecteplase] and the patient codes'. I'm like 'really?' And I had given it...two or three times before and they never coded. I'm like 'okay...let's hook him up to the paddles just to be safe.' So, we hook him up to the paddles...we gave...the TNK and 20 minutes later he coded...we ran the code for 20 minutes and we got him back.*

Similarly, Daisy (proficient RN) explained how she had depended on another RN, hardcopy information, and the physician to administer a time-sensitive medication during a high acuity, complicated situation. Together, they critically analyzed the AHS medication algorithm, assessed the consequences of their learning, and then deliberatively problem-solved the scenario by including the physician's input. She stated: *...so, I use another nurse, we use the algorithm in the crash cart binder, and...a smart pump. ...the doctor's still standing there. So...we...talk this out and look at him and say, '...clarify...let's make sure we're all on the same page here'.*

In a different and less collaborative way, Shelly (proficient RN) indicated that often the team she worked with drew heavily from their co-workers to find someone to lead the team during emergency scenarios. She described it this way: *...in the rural setting..., I found that I was either mentoring or being mentored and it was...less of bouncing things off each other. It was more like this person is looking to you or you're looking to someone else; there was less... problem solving in-the-moment. ...like one person was more leading, I guess.*

In some scenarios/situations participants would use their intuitive cognition to assess the

179

situation against their previous knowledge. Once they recognized their lack of the knowledge

needed to provide capable, safe patient care, they would use their deliberative cognition to access

an expert practitioner off-site or a peer on-site. They would then follow the step-by-step direction

or guidance of this resource, whilst simultaneously providing patient care.

Following Step-By-Step

In the following excerpt, Chantal (competent RN) indicated how she, another RN, and

the on-site physician followed step-by-step directions/orders from a RAAPID pediatric intensive

care unit (PICU) physician via telephone when they were unfamiliar with the medical and

nursing care needed to provide an emergent, pediatric patient safe care. This chaotic situation

consisted of many competing unknowns that afforded little time to think. The rural team was

engaging in a considerable degree of new learning with optimal learning support from the expert

physician, which then provided them with a moderate to high degree of confidence in their

ability to safely provide that care.

So, we had this two-year-old, again, it's not very often in rural we get peds [pediatrics].

So, we're uncomfortable. So right away [I was] on the phone with RAAPID trying to sort out

what we are going to do. The flight crew was coming to get her. We're doing what RAAPID is

telling us. That was one of those situations where we were just…doing and they told us…'she's

two, this is what you need to watch for' and so it is definitely them helping us. So, at one point

the doctor actually was on the phone with RAAPID – she just put it on speaker for us both and

they were both…walking us through what to watch for…how much Versed we have to give, if we

have to intubate. And what we're doing if she stops breathing.

In the above scenario, the type of just-in-time learning Chantal and her colleagues were

engaging in does not wholly fit the definitions of informal learning provided by Eraut (2004a):

tacit, reactive, and deliberative. They were engaging in a form of experiential learning (learning

by doing) that was directed by the RAAPID expert physician. It was like engaging in tacit

learning because it involved experiential learning and like reactive learning because it involved

reflection to acknowledge their minimal previous experience in providing care to pediatric

patients, and similar to deliberative learning because they were consulting with an expert.

However, it was not unintentional like tacit learning; supported by previous experience

consistent with reactive learning; nor involved decision-making, problem-solving or goal setting

like deliberative learning because they were following the expert physician's directions step-by-

step. I am now introducing a new term, *directed learning*, which is the process of acquiring

propositional knowledge using one's analytic cognition to follow the step-by-step directions of

an expert while simultaneously engaging in experiential learning to perform the interventions.

Similarly, but in a non-urgent, complicated situation, Lucy (expert RN) and her team

also engaged in experiential learning to complete nursing interventions directed step-by-step by

an expert oncology RN over Zoom. Lucy described that situation this way: *...one person was*

holding the computer and one person was documenting and one person was…explaining things

to the patient and one person was measuring and we just worked as a team because that's what

you have to do in a small rural hospital.

Two different step-by-step just-in-time learning situations occurred for both Jane

(expert RN) and Tina (competent RN). Jane executed an infrequently performed non-urgent task

(tracheostomy care) guided by an LPN who was simultaneously reading the procedure to her. It

went as follows: *It'd been a hot minute since I [had done] it [tracheostomy care]. So, I came*

onto night shift with an LPN. The RT on the whiteboard wrote all the…cheat sheet notes there.

…I'm like…let's figure this out. And we did. She [the LPN] read through the policy…, she

coached me through it, and we made it work. Similarly, Tina was guided by a peer when

reconstituting an IV medication. She explained the situation this way: *...with mixing up meds*

181

[medications]…they'll be looking up, 'oh, is it compatible with this?' while you're mixing up the med and they'll be like, oh, make sure you take out…20 mls [milliliters] to put in the 20 mls [and], use sterile water. In Tina's case, one learner used their analytic cognition to compare their tacit knowledge with the propositional knowledge found in the AHS medication monograph and then guided the other in learning how to correctly mix the medication.

Both participants in the last two scenarios had been engaging in a form of experiential learning similar to directed learning; however, their learning was being guided by a peer, not directed by an expert, as the peers were not experts in these tasks. Again, this type of learning, like directed learning, was neither unintentional nor decision-making, problem-solving, or goal setting; nonetheless, it did include a certain element of reflection by both participants, which aligns with reactive learning. Jane had performed the task many years prior, and Tina had reconstituted many other IV medications. I am now introducing another new term, *guided learning*, which constitutes a process of using one's analytic cognition to acquire propositional knowledge through following the step-by-step guidance of a peer who is reading out loud a protocol written by an expert (in these cases, the RT and AHS pharmacists respectively) while simultaneously performing (doing) the intervention.

Learning Pre-/Post-Just-In-Time

Participants identified several pre- and post-just-in-time learning actions that supported them in becoming more confident in their ability to manage just-in-time learning scenarios or situations. They occurred prior to or after engaging in just-in-time learning activities and included learning through continuing education and pre-briefing/debriefing.

Learning Through Continuing Education

Three participants had been optimally supported by CNEs who provided on-site learning through continuing education. This type of formal pre-just-in-time learning, supported

acquiring propositional knowledge and experiential learning at the time of the learning activity, which then enabled quickly engaging in just-in-time reactive and deliberative learning activities when they later encountered similar situations.

Tess (proficient to expert RN) considered one of her previous CNEs as a *really strong* support because they were *readily available on hand* to provide experiential learning opportunities for infrequently performed tasks and skills. She highlighted the benefits of this type of support: *…having that…regular exposure to skills that we don't do often made us more confident when we did actually have to do those skills in real life.* In addition, Tess described how another CNE in a different previous rural hospital workplace had provided effective stackable learning opportunities. This approach enabled learning complex propositional knowledge and experiential procedures incrementally. Tess explained: *…every month there was some offering [by the CNE] and they built on each other. And ultimately…they all came together to provide us the skills…we would need to do the varying roles…we had to cover.*

Similarly, Mickey (expert RN) indicated that the CNEs in the facility in which she works had been providing frequent mock learning opportunities provided by experts from urban specialties. She contended: *…because we have educators – we are…on top of…lots of learning… because we're really close to XXX. …like obviously it's been a lot of Zooms, but we have a lot of people come to us and do…live time…pediatric codes in the ER with us.* From her comments below, it is apparent that this type of formal educational support has assisted Mickey during high acuity complex situations, when needing to engage in reactive and deliberative learning:

We run a lot of mock maternity situations, postpartum hemorrhage kind of stuff – we have a doll [simulator]. And I think, those have a huge impact in just staying with me in my brain. …[so] you can say, 'oh, you were a classmate, you remember when we did that. What did we do? Talk me through it again. Let's talk about what we did that day. Let's bring it back up.'

183

And, and so then you can…bring it back up in that rushed situation.

Likewise, Ashley (expert RN) described how the rural team, including CNEs, have

collaborated with *RAAPID* physicians to ensure that staff in the facility in which she works are

prepared for providing care to patients transferred *from the city* who have complex equipment,

which reduces the need for just-in-time learning. She claimed: *…we'll integrate with RAAPID to*

make sure that we have the equipment; that we've had some teaching on how that equipment

works. …then the education team will…make sure…there's a good smattering of people…who

have had the…teaching…[about it].

However, in another rural hospital workplace, Ned (expert RN) took a casual position

so that she could support the learning needs of the staff. Her concern stemmed from rarely seeing

the CNE and the need for staff to generate their own on-site learning opportunities. She

observed: *That's why…I went casual. I was having difficulty maintaining a part time position as*

well as trying to fill in education gaps. …now…I'm doing more education. …and…we run all

our own courses pretty much.

Several participants identified the importance of engaging in continuing education on

their own to support developing their skill set and thus, building their confidence level. For

Chantal (competent RN), continuing education courses have optimally supported her

propositional and experiential knowledge, which then has supported her intuitive thinking

processes during emergency scenarios when there is little time to think. She stated: *I took the MI*

course and an ECG course; …they really push the importance of doing a 15 lead [ECG]. …it

was very helpful because then I was doing those extra…things that RAAPID would be asking for.

In contrast, formal post-just-in-time learning was identified as beneficial to increasing

one participant's confidence level for managing code (resuscitative) situations. Ric (a competent

RN) who had experienced a chaotic code situation prior to learning ACLS two weeks later,

explained how this post-just-in-time learning *validated a lot of things that [had been] done in the scenario,* while also showing her *what [she] could have done better.* She emphasized that *because [she'd] gone through a similar experience already, it reinforced the learning a lot more, as opposed to just doing an ACLS course.*

During a similar emergent, chaotic situation, Mel (proficient to expert RN) claimed that *it's hard to do active teaching…because there's just not time to be going through and answering…questions.* She described *in-the-moment* teaching as *instructing like, 'okay we're gonna hang this bolus now.'* She then indicated that the learning for her peer probably occurred post-just-in-time. She communicated the following to her peer: *'…after the fact we're going to come back to it and discuss…why we did what we did, and do you have any questions and that kind of thing?'* This type of learning resembles learning through debriefing.

Learning Through Pre-Briefing and Debriefing

Four participants who are expert RNs highlighted the merits of engaging in formal debriefing after providing care for high acuity patients during complex or chaotic situations; one also emphasized the benefits of participating in formal pre-briefing. These participants all contended that debriefing is a good way to support managing future encounters of similar scenarios or situations. According to Ashley: *…with effective and appropriate debriefing, you get better long term, consistent just-in-time learning from chaotic experiences.* Lucy indicated that debriefing is a good way to improve one's skill set because you *can always do better.* Alternatively, Mickey expressed that she loves debriefing because *it brings things out and everybody gets to say their piece about it* but that where she works, they *are not very good at it.* Ned noted that the team including physicians with whom she works *are willing to work closely together and appreciate the debriefs.*

Ned also emphasized that having a team educated in the art of both pre-briefing and

debriefing is an optimal *proactive* way of supporting staff in managing difficult scenarios or

situations. She stated: *…one of our physicians…[our site leader], and I [are] all trained in*

debriefing…in the WISE [Workshop in Simulation Education] program, which…teaches the art

of pre-briefing before a situation and debriefing following the situation.

In one of the rural hospital workplaces in which formal debriefing has been instituted,

the CNE has been fundamental in developing and maintaining this formal learning process.

Ashley (expert RN) described that optimal learning support: *…And our…education team here in*

the past four or five years has absolutely instituted a consistent debrief scenario for anything

that gets a little bit more complex than a routine delivery. She also acknowledged that instituting

this debriefing process was not without its challenges.

As follows, Ashley made clear how staff were initially resistant to the five-question

debriefing process: *…I remember…the first time I said, 'hey, guys, we should do a quick take five*

debrief.' And…there was…'oh, I've got other things to do. I've got to do charting, I've gotta do

that.' However, within a year of implementing debriefs, the staff with whom Ashley worked

embraced the process and began to engage in it willingly to support their learning. Debriefing in

these situations has enabled discussions and collaborations with teammates and nursing students

about what has gone well and what could be improved during high acuity, complex or chaotic

situations. Participants' future [reactive learning](#) has also been supported because of the learning

that has occurred during the debriefs, which has provided them with knowledge to draw from

just-in-time when needed. Ashley explained it this way: *…within a year…of consistently doing*

that [debriefing], chaotic scenarios started to go less chaotic because people were taking their

debrief conversations and implementing them into their practice…we were…recognizing where

can we learn from what we just did.

Ashley coined debriefing *chaotic-justified learning* and underscored the significance of

186

the final step in the process – follow-up – because it has been instrumental to promoting practice change in the rural hospital in which she works. She stated: *…I think that's where chaotic-justified learning comes from is that reflection and that debrief. …one of the last questions in that just take five debrief is who's going to take responsibility for implementing the change? And then that person actually does that and implements a change or…an improvement.*

In one rural hospital workplace in which formal debriefing has not been instituted, Daisy (proficient RN) described how she has engaged in self-debriefing (informal debriefs in her own mind) after experiencing high acuity, complex or chaotic situations. This type of self-debriefing has included asking herself these questions: *'what things went well? what things do I need to remember if this happens again or if a situation's similar?'* She highlighted that the unknowns of situations can be *overwhelming [but] if you've been [through a situation] you're like, 'okay, this is what we did last time. This is what we're gonna do if we do it again.'*

Similarly, Jane (an expert RN) identified that formal debriefs were not well supported in the rural hospital workplace in which she works and that if one was wanted, the staff were expected to ask for it. She contended: *…we didn't have a debrief [after a resuscitative, chaotic situation] and I didn't really even know what that was. We did an informal one after with…staff working, but management had told us the next week that if we had wanted debriefing, it was our job to ask for it.* Jane also went on to express that one physician had been very good about hosting informal debriefs after challenging situations. She imparted: *…if we have a code, we have one doctor who's very good at just chatting with everyone, after we go through everything.*

Chapter Summary

In this chapter, I explicated the overarching theme *It Varies!* as actions the participants engaged in during their just-in-time learning activities. Extending from Chapter 4, theme five *Who/What Are My Go-To Resources?* encompassed my description of the human, online, and

hardcopy resources participants have chosen to support their just-in-time learning actions. These choices were influenced by how quickly they could be accessed, the level of support they offered (ranging from suboptimal to optimal), and if the participants were themselves, the resource. In theme six, *What Are My Learning Actions?* I attended to the just-in-time learning actions participants had engaged in by themselves, with others, from others, and pre- or post-just-in-time learning. It is in this theme that I generated two new terms for the types of informal learning that I had not previously seen in the literature: *directed learning* and *guided learning*.

In Chapter 6, I seat the findings of this study in the literature, include its strengths and limitations, identify implications for the field of education and the profession of nursing, and provide recommendations for rural stakeholders and further research. The recommendations section encapsulates theme seven of *It Varies! Who/What Could Make It Better* and my own suggestions to assist rural stakeholders with generating and implementing strategies to support rural RNs' future just-in-time learning activities. I close the chapter by providing a conclusion to this study/dissertation.

Chapter 6. Discussion, Strengths and Limitations, Implications, and Conclusion

My purpose in this study was to identify and provide recommendations for rural stakeholders to assist them in generating and implementing strategies to support the just-in-time learning activities of RNs in the rural hospital workplace. The overarching research question that guided this study was: "To what extent do RNs in the rural hospital workplace perceive that blended educational resources support their just-in-time learning activities?" Sub-questions included: In what situations do rural RNs perceive that they require just-in-time learning activities? What intrinsic cognitive processes do rural RNs perceive they use to engage in just-in-time learning activities? What blended educational resources (human and tangible) do rural RNs perceive as influencing their decisions about engaging in just-in-time learning activities? What blended educational resources (human and tangible) do rural RNs perceive would improve their ability to practice capably and safely? In Chapters 4 and 5, I provided the findings of this study as a thematic description and conceptual model titled *It Varies! Blended Educational Support for Rural Registered Nurses' Just-In-Time Learning Activities*, except for the discussion surrounding Theme seven: *Who/What Could Make It Better*, which I include in this chapter. The overarching theme, *It Varies!* encompasses the context of the rural hospital workplace and the just-in-time learning actions of the rural RNs who participated in this study.

In this chapter, I begin by seating the findings of this study within the existing literature about rural RNs' just-in-time learning activities, as well as highlighting new findings stemming from the study. I then acknowledge the strengths and limitations of the study. Next, I discuss the implications of the study for the field of education and the profession of nursing. After that, I provide several recommendations for rural stakeholders offered by the RNs who participated in this study and by me, followed by my suggestions for future research. Finally, I provide closing comments to conclude this study/dissertation.

Discussion

Although there is a significant amount of literature in which researchers have examined informal learning across a variety of professions, there are few studies about the type of informal learning known as just-in-time learning and how it specifically relates to RNs who work in the rural hospital workplace. Therefore, the overall finding revealed in this study about the phenomenon of just-in-time learning, *It Varies! Blended Educational Support for Rural RNs' Just-In-Time Learning Activities*, contributes significantly to current knowledge about just-in-time learning. In previous studies about just-in-time learning, all but one of the samples were comprised of mixed cohorts including rural and urban RNs, or rural RNs and other health care practitioners. Moreover, the findings from this study help to increase awareness about how well blended educational resources within the context of the rural hospital workplace support the just-in-time learning actions of the RNs who practice in that context.

It Varies! The Context

Within the context of the rural hospital workplace, there were myriad situations (ranging from simple to chaotic) aligning with Snowden and Boone's (2007) cynefin framework that required all participants to engage in just-in-time learning activities. Each participant's perception of the complexity of these varied situations was shaped by their rural RN role (generalist versus non-generalist) and their level of RN expertise (ranging from advanced beginner to expert).

Rural RN Role (Generalist versus Non-Generalist)

In this study, nine participants practiced as generalist RNs and four as non-generalists. New information emerged during this study about how the rural RN role is shaped by the three different types of RN staffing models currently being used in rural hospital workplaces across the province of Alberta in Canada. In addition, new findings highlight how the RN role influences

the just-in-time learning activities of RNs in the rural hospital workplace.

During my previous research about the transition of new Bachelor of Nursing graduates into the Alberta rural acute care hospital workplace (Smith, 2014; Smith & Vandall-Walker, 2017), I learned that there were two models of staffing in that setting: a generalist model staffed with generalist RNs and an urban-type model staffed with non-generalist RNs. As I recruited participants for my current study, I learned that there are now three different types of RN staffing models currently being used in rural hospital workplaces across the province: generalist hospitals staffed with generalist RNs, urban-type hospitals staffed with non-generalist RNs, and generalist and urban-type hospitals staffed with a combination of generalist and non-generalist RNs. The significance of these findings is that the type of RN role within these various staffing models influences the diversity of the just-in-time learning activities needed to manage the situations rural RNs may encounter. Contextual factors in the study that impacted this diversity include the types of services offered within the various rural hospital workplaces and whether participants had timely access to adequate blended educational resources.

Types of Services Offered. There exists a plethora of Canadian literature spanning decades in which researchers describe the types of services offered in the generalist rural hospital workplace and the roles and responsibilities of generalist RNs who work in these facilities (CARRN, 2020; Hunsberger et al., 2009; MacLeod, 1999; MacLeod, Kulig et al., 2019; MacLeod & Place, 2015; Sedgwick, 2008; Sedgwick & Pijl-Zieber, 2015; Smith, 2014; Smith & Vandall-Walker, 2017). However, no Canadian researchers have highlighted the roles and responsibilities of the non-generalist RN in these generalist facilities. Although AHS (2023b) and CH (2023) both provide an online list of the types of services available in Alberta rural urban-type hospitals, there is a paucity of research (other than my own) about the roles and responsibilities of the RNs who work as non-generalists in these rural urban-type facilities

191

(Smith & Vandall-Walker, 2017). Moreover, researchers have not described the roles and responsibilities of generalist RNs who practice in rural urban-type facilities and if their practices differ from generalist RNs who work in generalist-type rural hospitals. At best, I was only able to find literature recommending that rural nurses in Australia (Twigg et al., 2016) and rural and urban nurses in Canada (Tomblin Murphy et al., 2022) be offered flexible work arrangements to support their recruitment and retention. In addition, I found no literature addressing if the varying types of rural RN roles differently influence the just-in-time learning activities of RNs in the disparate rural hospital workplaces. Next, I address the influence of timely access to blended educational resources on rural RNs just-in-time learning activities.

Access to Blended Educational Resources. Two new findings in this study are that, in some Alberta rural hospital workplaces, there is more than one CNE on-site to support the just-in-time learning of RNs, and that in other sites there are on-site clinical resource nurses (CRNs) who provide optimal levels of just-in-time learning support. These findings are significant because they directly impacted how some participants engaged in just-in-time learning activities and their subsequent confidence in their ability to practice capably and safely. Those who experienced the optimal support of a CNE or CRN described considerable confidence in their nursing practices, while those without it expressed often feeling stressed, overwhelmed, and lacking confidence in their ability to provide capable, safe patient care. Although there were staff and practitioners in the rural hospital workplace who effectively supported participants' just-in-time learning activities, there were also work cultures in which participants were not supported.

Two participants in this study indicated that they relied on the mentorship of senior staff, which supports Rohatinsky and Jahner's (2016) contention that mentorship has been an effective way to support new Saskatchewan RNs and LPNs in their just-in-time education endeavors. Conversely, two participants in this study did not feel supported by the work culture

in the facility in which they worked, information previously reported in the Australian (Riley & Schmidt, 2016), Canadian (Curran et al., 2019; McClenaghan, 2020), and U.S. (Burman et al., 2021) literature. One of these participants felt unsafe in her nursing practices, so she left that rural hospital workplace and went to work in a different rural hospital where she did feel supported. The other offered a recommendation for rural nurse managers for how to improve staffing configurations in the ED, which I address in theme seven later in this chapter.

Although most participants identified physicians in the Alberta rural hospital workplace as often supportive of their just-in-time learning, a few found some to be sub-optimally supportive as previously reported by Sedgwick and Pijl-Zieber (2015) and Smith and Vandall-Walker (2017). Resoundingly, participants in this study contended that on- and off-site pharmacists provided optimal support for their just-in-time learning, a finding consistent with my previous exploration into new degree nurses' transition into the rural hospital workplace (Smith & Vandall-Walker, 2017).

All participants in the current study indicated the need to frequently access online educational resources to support their just-in-time learning activities, which is consistent with research spanning the last seven years from Australia (Martyn et al., 2019; Rees et al., 2021; Riley & Schmidt, 2016), Canada (Curran et al., 2019; Franchuk, 2021; Kosteniuk et al., 2019), and the United States (Bradley et al., 2020; Burman et al., 2021; Zhu et al., 2021). However, several participants identified barriers to accessing these resources, which supports earlier research that poor Internet services, technical issues (Curran et al., 2019), lack of time (Rees et al., 2021; Riley & Schmidt, 2016), and competing demands (Burman et al., 2021) have influenced rural RNs' ability to access online resources.

Unlike existing Australian literature (Mather et al., 2017; Mather et al., 2019), participants in this study were encouraged or expected to use online resources to support their

just-in-time learning activities with evidence-based information. Nevertheless, one participant had not been adequately supported in how to use an online tool she was expected to capably document with in-the-moment, which supports Kleib and Nagle's (2018) contention that some Canadian rural hospital employers have not provided adequate support for how to use digital resources. Interestingly, what is not reported in most of the studies mentioned here are the types of information RNs were accessing. In the section Situations Requiring Just-In-Time Learning Activities, I indicate the types of new and review information participants had accessed. Moreover, two participants highlighted the benefits of using Connect Care to assist with their just-in-time learning activities, a finding that supports Brown et al.'s (2021) description of the merits of health care providers using Connect Care to efficiently access educational resources.

A few participants in this study perceived that hardcopy cheat sheets and flip charts had been optimal just-in-time learning resources, especially in emergency situations when time was of the essence. These findings are consistent with a previous Canadian study conducted by Kosteniuk et al. (2019) indicating that many regulated nurses across Canada preferred accessing hardcopy resources, as opposed to online resources, to support their learning.

Notably, participants who had been provided adequate to optimal just-in-time learning supports, such as easily accessible on-site mentorship, CNEs, and evidence-based online resources, described confidence in their ability to practice capably and safely. These findings support my previous contentions about the learning supports needed in the rural setting (Smith & Vandall-Walker, 2017), as well as those of numerous other researchers who have studied the rural hospital workplace (CARRN, 2020; Crawford, 2019; Hunsberger et al., 2009; MacLeod, 1999; MacLeod & Place, 2015; Sedgwick, 2008; Sedgwick & Pijl-Zieber, 2015). Alternatively, participants who had not been adequately supported described feeling stressed, overwhelmed, and lacking confidence in their ability to provide patient care capably and safely, which aligns

194

with similar claims in previous studies (Hunsberger et al., 2009; MacLeod, 1999; MacLeod & Place, 2015; Sedgwick, 2008; Sedgwick & Pijl-Zieber, 2015; Smith, 2014; Smith & Vandall-Walker, 2017). Importantly, participants' levels of RN expertise coupled with the level of just-in-time learning support influenced how they enacted their RN role.

RN Level of Expertise

Evident from the findings in this study, Benner's (1982) novice to expert model was well supported. Participants' descriptions of their RN levels of expertise aligned with Benner's advanced beginner, competent, proficient, and expert, as well as reflected the changes in their levels of skill performance in two ways. One, it was evident that participants who are proficient to expert RNs had moved from reliance on abstract principles found in policies, protocols, and textbooks to that of also using past, concrete experience to support decisions about their nursing practices, whereas advanced beginner and competent RNs typically had not made this shift (Benner, 1982). Two, participants who are expert RNs tended to view any type of situation (no matter its complexity) as a complete whole, whereas those less experienced perceived each situation as a compilation of its complex parts (Benner, 1982).

Participants' explanations about their shifting levels of expertise were consistent with Benner's (2004) assertion that a practitioner may be at different levels of skill in different areas of practice based on their background experience and knowledge. Participants indicated that one can shift up or down the expertise continuum (no matter their level of expertise) if expected to work in an area to which they are unaccustomed, and/or due to factors such as reduced time practicing in a facility (switching from a full-time position to a casual one), a change in jobs (from urban to rural or between rural hospitals), or a return to work from extended time away. Likewise, shifting down the expertise continuum supports Parks et al.'s (2020) claim that U.S. expert RNs become novices when changing from the practice environment to academia. Next, I

195

address situations that required participants to engage in just-in-time learning activities.

Situations Requiring Just-In-Time Learning Activities

Participants in this study encountered an array of situations of varying complexity that triggered the need to engage in just-in-time learning of new or review information. While these perceptions were influenced by their level of expertise, they were also impacted by environmental factors that included patient acuity levels (ranging from non-urgent to resuscitative), as well as issues related to staffing shortages that were simultaneously occurring within the rural hospital workplace. Most of the learning triggers identified by participants in this study can be categorized into three distinct groups: managing complex, diverse patients; coping with inadequate orientations; and learning new policies/protocols/information.

Managing Complex, Diverse Patients. The requirement to care for complex, diverse patients of differing levels of acuity in the rural hospital workplace has been well reported in the previous literature (CARRN, 2020; Hunsberger et al., 2009; MacLeod, 1999; MacLeod, Kulig et al., 2019; MacLeod & Place, 2015; Sedgwick, 2008; Sedgwick & Pijl-Zieber, 2015; Smith, 2014; Smith & Vandall-Walker, 2017). However, bed and staff shortages in urban hospitals have perpetuated the need for RNs in the rural hospital workplace to care for patients of higher acuity levels than had previously been expected of them (CARRN, 2020). In this study, these patients required treatments or procedures that included managing CADs, PICCs, IVADs, specialty intubation equipment, chest tubes, Pleurex drains, phlebotomies, specialty wound dressings, and rare medications. Although these treatments are common for RNs working in specialty areas of nursing, such as urban units and home care, they are relatively new to many RNs working in the rural hospital workplace. In turn, these treatments add complexity to their work since performing them capably and safely requires the need to engage in just-in-time learning activities.

Coping with Inadequate Orientations. It has been well documented in the Canadian

196

literature that orientations for new hires in the rural hospital workplace have often not adequately supported effectively learning the rural RN role (Sedgwick, 2008; Sedgwick & Pijl-Zieber, 2015; Smith, 2014; Smith & Vandall-Walker, 2017). Likewise in this study, one participant had not been oriented to the code system, another had not been told how to manage transfers of patients from private vehicles, a third had not been shown the location of resources in the ER, and a several others had not been taught how to perform certain treatments/procedures.

Learning New Policies/Protocols/Information. Advancing technology has perpetuated consistent change in evidence-based policies, protocols, and available information in the rural hospital workplace (Smith & Vandall-Walker, 2017). A new finding in this study that triggered the need for one participant to engage in just-in-time learning activities was the expectation to document a procedure she had performed in the ER using Connect Care, an online documentation platform that she had learned how to use for the medical unit, but not for ER.

Another participant in this study identified the challenges of engaging in just-in-time learning to manage consistently changing policies and procedures stemming from the COVID-19 pandemic, findings which support Yoderwise's (2020) contention that the rules surrounding COVID-19 procedures frequently changed throughout one's shift. Two participants indicated that physician idiosyncrasies had required them to engage in just-in-time learning activities to provide timely, efficient care, as previously reported by Smith and Vandall-Walker (2017) about new RNs transitioning into the rural hospital setting. Several participants in this study outlined the processes they used to engage in just-in-time learning when preparing medications to administer to patients, not unlike those described by Martyn et al. (2019) about novice to expert RNs in a rural regional hospital in Australia. However, new findings in this study highlighted the thinking actions that RNs engage in when administering medications. I now turn to addressing the varying actions of participants when engaging in just-in-time learning.

197

It Varies! The Actions

The findings of this study reveal new information about the intrinsic cognitive processes that RNs in the rural hospital workplace use to make decisions about their just-in-time learning actions, as no study to date has reported these processes specific to RNs practicing in the rural hospital workplace. Although Eraut's previous (2000, 2004a, 2004b) work had effectively described the intrinsic cognitive processes used by accountants, engineers, and nurses when engaging in informal learning, none of his studies were specific to RNs in the rural hospital workplace. Moreover, two new types of informal learning that I termed *directed learning* and *guided learning* emerged during this study. These terms differ from Eraut's (2000) typology of informal learning that consists of tacit, reactive, and deliberative learning. Furthermore, the findings of this study uncover how accessibility (or lack of access) to blended educational resources influences rural RNs' decision-making during their just-in-time learning activities and in turn, ability to practice capably and safely. In the next section, I discuss and summarize the intrinsic cognitive processes used by the participants in this study to access blended educational resources and engage in just-in-time learning actions in the rural hospital workplace. To begin, I address their thinking processes when choosing which blended educational resources to access.

Choosing Blended Educational Resources

Participants in this study accessed a variety of go-to blended educational resources to support their just-in-time learning actions. The thinking processes they engaged in when choosing these resources are consistent with Watkins and Marsick's (2021) adapted model of informal and incidental learning. Like Watkins and Marsick's model, once participants had encountered a learning trigger, they proceeded to use reflection-in-action to interpret that trigger within its situational context (ranging from simple to chaotic) amidst the influences of patient acuity levels and staffing complements and levels. They then framed what the trigger meant to

198

them from past experiences using their intuitive cognition, as defined by Eraut (2000). Next,

participants used their analytic and deliberative cognitions, aligning with Eraut's definitions, to

examine alternatives and select optimal solutions (go-to resources) to support their learning

actions. However, differing from Watkins and Marsick's model, participants of all levels of

expertise (not just the experts) reframed their thinking (no matter how complex the situation) to

manage their just-in-time learning needs. To do so, like Watkins and Marsick's model, they

opened their minds to alternatives, explored other options, consulted those more experienced

(deliberatively consulted on-/off-site human resources), looked at good practices (analyzed

evidence-based online or hardcopy policies, protocols, and information), experimented with

different ways of doing things, and ultimately self-determined their best learning actions. Often

(but not always), participants with more experience simultaneously, critically reflected on what

had been happening while reframing their thinking, thereby engaging in what Argyris and Schön

(1974) refer to as double-loop learning. One notable difference between the expert participants

and those less experienced was how quickly they made decisions about their learning needs, the

plausible available solutions (go-to resources), and their subsequent learning actions.

Identifying Go-To Resources. Participants identified their go-to (just-in-time) blended

educational resources in three distinct categories: human, online, and hardcopy, which aligns

with Kosteniuk et al.'s (2019) results about the types of educational resources Canadian

regulated nurses have accessed to support their continuing education needs.

Human Resources. Participants in this study accessed peers, mentors, and pharmacists,

which aligns with Martyn et al.'s (2019) findings about some rural hospital environments in

Tasmania, Australia, and Rohatinsky and Jahner's (2016) finding that new LPNs and RNs in

Saskatchewan, Canada have sought just-in-time learning advice from senior mentors.

Participants also accessed specialty human resources to bolster their just-in-time learning, a

finding that supports Zhu et al.'s (2021) contention that real-time asynchronous and synchronous telemedicine has been effective learning support in some Midwest states in the United States. Likewise, Burman et al. (2021) highlighted the ECHO model for nurses' professional development as a good strategy for supporting just-in-time learning in Wyoming, United States. Similarly, Baylak et al. (2020) reported that a telehealth pilot project had been effective in providing off-site physician expertise to support the just-in-time learning of some RNs and physicians in rural ER trauma rooms in British Columbia, Canada. This type of informal learning aligns with the new type of *directed learning* stemming from my study.

A new finding in this study was that two participants had access to more than one on-site CNE in their rural hospital workplace and/or to on-site CRNs to support their just-in-time learning actions, as discussed in the section It Varies! The Context. Other participants had never met or seldom had access to a CNE, findings consistent with Kosteniuk et al.'s (2019) and Smith and Vandall-Walker's (2017) claims that many Canadian rural RNs lack in-house CNE support.

Online Resources. All participants in this study had accessed evidence-based online policies, protocols, and information to support their just-in-time learning actions. Two identified Connect Care (via a fixed or portable computer workstation) as a great online tool for efficiently accessing multiple resources quickly, while others found its use challenging, findings similar to those of Brown et al. (2021) about the use of Connect Care in Alberta, Canada. Like nurses, pharmacists, and physicians in Newfoundland and Labrador, Canada (Curran et al., 2019) and RNs in some Australian regional, rural, and remote hospitals (Rees et al., 2021), some participants in this study had experienced information overload when accessing online resources.

Differing from the findings by Franchuk (2021) about the use of virtual simulation to support learning how to don and doff personal protective equipment during the COVID-19 pandemic in Alberta, Canada, participants in this study did not identify virtual simulation as a

just-in-time learning tool. Nor did they indicate that they used QR codes (via a PDA) to link to resources as a means of supporting their just-in-time learning actions, tools that Bradley et al. (2020) claimed could be a game changer for just-in-time learning support. Likewise, and contrary to Curran et al.'s (2019) assertion that YouTube videos had provided good just-in-time learning support for healthcare providers in Newfoundland and Labrador, Canada, participants in this study denied using these just-in-time learning tools to support their learning.

A few participants in this study had depended on their personal PDAs (typically smartphones) to access information to support their just-in-time learning activities because of poor Wi-Fi in their respective rural hospital workplaces. These Internet infrastructure challenges are like that of other Canadian nurses and practitioners in Newfoundland and Labrador (Curran et al., 2019), regulated rural nurses across Canada (Kosteniuk et al., 2019), and nurses in parts of Australia (Rees et al., 2021). Two participants felt forced to use their PDAs to access information via Google because of poor Internet service similar to regulated rural nurses across Canada in Kosteniuk et al.'s study, even though they understood that it did not support best practice. Not unlike Rees et al.'s findings, two participants in this study indicated that PDAs and learning applications were generally at the expense of the individual.

Hardcopy Resources. Some participants in this study acknowledged that they preferred using hardcopy resources in the form of cheat sheets and flow charts instead of difficult to access online resources, which supports Kosteniuk et al.'s (2019) contention in relation to regulated rural nurses across Canada. I now address the cognitive skills participants used to make choices about who/what blended educational resources to access.

Making Decisions About Who/What to Access Quickly. When choosing their go-to blended educational resources, all participants typically used a combination of their analytic, intuitive, and deliberative cognitions, as previously defined by Eraut (2000). Factors influencing

their choice of learning actions included the amount of time available (ranging from none to plenty), patient acuity levels (ranging from non-urgent to resuscitative), and the degree of learning required (extending from none to considerable), and their perceptions of the level of support offered by the available blended educational resources (ranging from sub-optimal to optimal). Most participants had (at times) been the just-in-time learning resource for others.

Although the literature is replete with studies indicating that rural RNs support (or not) each other in the roles and responsibilities of practicing as rural RNs (Hunsberger et al., 2009; MacLeod, 1999; MacLeod & Place, 2015; Sedgwick, 2008; Sedgwick & Pijl-Zieber, 2015; Smith, 2014; Smith & Vandall-Walker, 2017), these studies do not specifically identify the intrinsic cognitive thinking processes that rural RNs use when they are providing that support. New findings in this study highlight these processes and how they differ dependent on the level of expertise of the individual. Expert RN participants tended to confidently support their less experienced peers through knowing the strengths of the team with whom they were working, providing clear explanations of what was expected of their less experienced peers, and delegating tasks as necessary. To do so, they used a combination of their affective, cognitive, and psychomotor skills to remain calm, engage in mindfulness, take deep breaths, prioritize, reflect, step back, focus on the situation, look at the big picture, rely on their intuition, and step in to assist. Alternately, participants with less experience tended to use their analytic, intuitive, and deliberative cognitions to learn alongside their peers and engage in just-in-time learning actions.

Engaging in Just-In-time Learning Actions. Participants in this study identified that they had engaged in a variety of just-in-time learning actions alone, with others, or from others depending on the time available for learning (stemming from the complexity of the situation) and the blended educational resources easily accessible to them. Likewise, participants/respondents in several previous studies reported engaging in just-in-time learning actions alone (Curran et al.,

2019; Kosteniuk et al., 2019; Martyn et al. 2019; Rees et al., 2021; Riley & Schmidt, 2016), with others (Burman et al., 2021; Kosteniuk et al., 2019; Martyn et al. 2019), and from others (Baylak et al., 2020; Franchuk, 2021; Smith et al., 2020; Zhu et al., 2021). However, in these studies, the intrinsic cognitive processes they used to engage in just-in-time actions were not identified. In my study, participants had engaged in a combination of tacit, reactive, or deliberative learning actions that align with Eraut's (2000) typology of informal learning, and sometimes *directed* and *guided learning* actions (the two new types of informal learning that emerged during this study, as discussed in Chapter 5, Learning from Others and in this chapter, It Varies! The Actions).

All participants in this study identified the benefits of engaging in continuing education actions pre- or post-just-in-time to support managing complex and chaotic situations, which is consistent with Smith et al.'s (2020) study about the use of mobile high-fidelity simulation to support managing complex and chaotic situations in rural hospitals in Carolina, United States. Likewise, Burman et al. (2021) highlighted the ECHO project in Wyoming, United States as an effective way of supporting rural nurses in learning specialized topics through videoconferencing in a professional learning network. Moreover, Zhu et al. (2021) indicated that real-time professional training through telemedicine in the Midwest states of the United States has supported rural practitioners with staying current on topics relevant to the ER.

Several participants in this study emphatically agreed that a stackable rural nursing certificate tailored to individuals would support their continuing education and just-in-time learning needs. This finding supports Mickan et al.'s (2019) contention that the learning needs of rural nurses in Queensland, Australia should be supported with academically recognized microlearning modules. Next, I address the strengths and limitations of this study.

Strengths and Limitations

In this interpretive description study, the methodological techniques I used to conduct

the study strengthened its credibility. First, I ensured the study's epistemological integrity by threading my research aim through the entire research design, beginning in the introduction, extending through the methods, and ending with the conclusion (Oliver, 2014). Second, I ensured its interpretive authority by representing the participants' voices in the findings (Thorne, 2008, 2016) and in the conceptual model I had generated. Third, I ensured its representative credibility by using member checking, theoretical sampling techniques, adopting and abandoning evolving themes, and explicitly identifying my *a priori* knowledge and biases in a research/ reflexive journal. Fourth, I ensured its analytic logic by creating an audit trail that consists of the raw data and my research journal. This audit trail provides explicit evidence of the decisions I made about the links between the data set and the analytic categories (Thorne, 2008). In addition, I maintained an analytic stance by using Strauss and Corbin's (1998) iterative and inductive data analysis approach, which included simultaneous data collection and analysis in Creswell's (2007) zigzag fashion. Fifth, in comparison with similar interpretive description studies (Levers, 2018 – n=15; Mather et al., 2019 – n=6; McDonald, 2022 – n=10; Smith & Vandall-Walker, 2017 – n=14), the total number of participants (n=13) for this study is strong. Sixth, there was diversity in the sample. The 13 RNs who participated in this study worked in different rural hospital workplaces within CH and the five zones of AHS across the province of Alberta, Canada. Moreover, they were of differing ages, cultures/races, and levels of education/expertise.

There are also some limitations to this study. Limitations of qualitative studies are typically methodological issues such as lack of generalizability (Cohen et al., 2018). As I delimited the sample to only rural RNs from across Alberta, Canada, perceived limitations are related to the sample and its impact on generalizability. First, participants self-selected by voluntarily responding to messages sent to them via UNA, AAN, and the RhPAP group, asking them to participate in the study. Therefore, the findings are limited to the perceptions of the

participants who volunteered to take part in the study. However, healthcare workers beyond rural

RNs in Alberta (i. e. RNs and allied healthcare workers practicing in other rural hospitals, urban

centers, or other provinces) may identify with the findings if they recognize them as similar to

their contexts, situations, and conditions, which would make the findings transferable to them

(Melrose, 2009). Second, as only one male participated, there was homogeneity in the gender of

the sample, which reduced its diversity. To counter this issue and to promote maximal variation

in the sample, I recruited participants of different ages, cultures/races, and levels of education or

expertise who work/ed in one or more rural hospital workplace/s within the two health

authorities (CH and AHS – across all five zones) in the province of Alberta, Canada.

While there are some limitations in this study, my attendance to Thorne's (2016) Factors

Beyond Evaluation Criteria also strengthened it. I ensured its moral defensibility and disciplinary

relevance by linking the findings to the potential benefits for practitioners in the rural hospital

workplace, which I include below. I ensured its pragmatic obligation by informing the

participants that they might use the findings in practice before I can publish them. I ensured its

contextual awareness and situated knowledges by articulating the findings as contextual to the

cultures, values, and politics of the current rural hospital workplace in Alberta, Canada. I now

address implications of the study for the field of education and the profession of nursing.

Implications

The findings of this research study can be used to inform future policy development in

education and nursing practice. Currently, there are inequities in the distribution of CNEs within

the rural hospital workplace across the different AHS zones and within CH. Moreover, in a few

rural hospital workplaces, CRNs have been hired to provide on-site support for the just-in-time

learning activities of rural RNs and staff, a hiring practice not consistent across the province. In

addition, there are inequities in RNs' timely access to adequate evidence-based online

educational resources, an issue perpetuated by poor Internet infrastructure in some rural Alberta hospital workplaces. Although this issue is being addressed across the province with the roll out of Connect Care, the two governing health authorities must collaborate with telecommunication companies to ensure adequate broadband Wi-Fi access in all rural communities. In 2020, only 37% of Alberta's rural communities had access to an Internet connection at the Government of Canada's basic service objective of 50/10 megabytes per second (Canadian Radio-television and Telecommunications Commission, 2020). Notably, participants who had adequate to optimal support from on-site CNEs or CRNs and online educational resources expressed confidence in their ability to provide patient care capably and safely, whereas those without it, did not.

The findings of this study can also be used to support rural RNs' continuing education and post-secondary curriculum development within Alberta. Rural nursing in Canada has long been espoused as a generalist specialty (CARRN, 2020; Hunsberger et al., 2009; MacLeod, 1999; MacLeod, Kulig, et al., 2019; Sedgwick & Pijl-Zieber, 2015; Smith & Vandall-Walker, 2017), but the provision of adequate continuing education within rural facilities has not been provided equitably in all rural hospitals across the province since the healthcare reform initiatives of the 1990s (CARRN, 2020; Crawford, 2019; Sedgwick & Pijl-Zieber, 2015; Smith & Vandall-Walker, 2017). In addition, few BScN programs within the province offer the education needed to practice as a rural generalist (Smith & Vandall-Walker, 2017). Moreover, there is only one certification program within the province to support this type of practice; it has recently been offered by the University of Calgary (2023) and is at the master's level.

The findings of this study can be used to inform future nursing practice in the rural hospital workplace. There is much to learn from rural RNs' understandings of their just-in-time learning activities relative to their RN role. Rural stakeholders must acknowledge these understandings to comprehend how to generate and implement strategies to effectively support

rural RNs in providing capable, safe patient care. Next, I address the recommendations for rural stakeholders as offered by the rural RNs who participated in this study as Theme seven of *It Varies! Who/What Could Make It Better*, as well as some recommendations of my own.

Recommendations for Rural Stakeholders: It Varies! Who/What Could Make It Better

Theme seven of *It Varies!* ([see Table 9](#)) encapsulates participants' recommendations for rural stakeholders that, if implemented, could support rural RNs' just-in-time and pre-/post-just-in-time learning activities. Participants aimed their ideas toward staff, clinical nurse educators, nurse managers, administrators, policymakers, and post-secondary education institutions.

Table 9

Recommendations for Rural Stakeholders

Staff	*Clinical Nurse Educators*	*Nurse Managers*	*Administrators and Policy-Makers*	*Post-Secondary Education Institutions*
Use Continuing Education to Strengthen Your Skill Set	Develop Quick Access Tools for Just-In-Time Learning	Recruit and Choose Experienced RNs to Mentor New Hires	Ensure Equitable Access to On-Site CNEs and CRNs	Provide Clinical Practica for Nursing Students in the Rural Hospital Workplace
Mentor Less Experienced RNs	Leverage Individually Accessible Continuing Education	Provide Tailored Orientations for New Hires	Provide Access to Specialty Disciplines	Make Widely Available a Stackable Rural Nursing Certificate
Embrace Learning from Chaos	Provide Tailored On-Site Continuing Education	Support Staff to Be Solution Focused	Provide Adequate Access to Online Educational Resources	
	Emphasize Benefits of Existing Educational Resources		Acknowledge Rural Nursing as a Specialty	

Staff

Participants' suggestions for staff consist of using continuing education to strengthen one's skill set, mentoring less experienced RNs, and embracing learning from chaos. They perceived that engaging in these learning activities could support staff in effectively managing the range of learning situations encountered in the rural hospital workplace.

Use Continuing Education to Strengthen Your Skill Set. To obtain and maintain one's skill set and thereby reduce the stress associated with managing just-in-time learning activities, several participants underscored the benefits of engaging in pre-/post just-in-time continuing education. Mickey (expert RN) recommended that engaging in *pre-education during downtimes and in the form of modules or mock codes is a good way to make in-the-moment learning better.* Similarly, Tess (proficient to expert RN) stressed the benefits (for her and the team) of learning from certification courses such as *ACLS* and *TNCC [Trauma Nursing Core Course]* because *they…give a very clear framework that can help guide us through unknown situations…to make chaotic situations more manageable.* Likewise, Lucy (expert RN) confided: *I look for other opportunities to learn…and because I've done [certifications] so many times, it gives me the confidence that…I can handle whatever comes in.* Ashley (expert RN) has used down time to learn new information, which she contended can subvert future chaos and the need for just-in-time learning about where to locate information. She stated: *…I am going to have to…use Connect Care…[so] then I had better learn how to use it when I have time.*

Mentor Less Experienced RNs. Ashley (expert RN) described the need for developing and nurturing individuals to become generalist RNs (who she refers to as float nurses): *You don't graduate float nurses, you develop them, you create them, you nurture them, you mentor them; they don't happen instantly.* She emphasized the significance of mentoring less experienced RNs in how to become comfortable with uncomfortable learning to build their confidence: *…if you're*

trying to coach and develop a strong rural nurse, it comes down to confidence in their skills…being comfortable in their own skin, and in their own learning capacity. She explained that she points out to inexperienced nurses how they have effectively engaged in problem-solving rather than allowing them to focus on simple, resolvable mistakes: *…I've had so many conversations with somebody who's like, 'oh, that dressing change went terribly.' …And I look at them and I go, 'yeah, but how did you manage that…how did you solve that problem?' And get them to see the positive learning opportunity in the experience.* She emphasized the importance of embracing new learning using a positive mindset: *If you see [a learning opportunity] as a barrier…it's going to always be a frustrating…terrible experience. If you look at a learning opportunity as a positive thing…it's gonna be a positive experience.*

Ned (expert RN) recommended that mentoring inexperienced nurses with how to work through protocols is an effective way to support them in learning how to manage high acuity scenarios, so they begin to perceive them as less so. She claimed: *…when a [person experiencing] chest pain came in last weekend…that new grad…had zero knowledge about how to proceed. So, we…get [the acute chest pain] protocol out…[to] follow it through. …the more she does, the better she's going to be at that, and she'll get much faster.*

Conversely, Lucy (expert RN) advised that mentoring new graduates also requires letting them learn new information on their own because providing them with the answers is not necessarily an effective way to support their learning. She stated: *…it would be very easy for me to tell them [junior staff]…how Lasix works and why it's different than… Spironolactone, but I make them look it up because that's how they're going to learn.* She also admitted that *…sometimes they get a little cranky because [she does not]…give them the answer.*

Learn from Chaos. Ashley (expert RN) recommended that new RNs embrace chaotic situations as learning opportunities by allowing themselves to let the learning happen. She

warned that if you resist the opportunity to learn from chaos, you won't learn anything but if you are open to it, you can learn a lot. She pointed out that chaotic situations are unscheduled in the rural environment, occurring at any time and are sometimes due to lack of experience: *…it might be that you're experiencing that [chaos] on your third day in emerg or on your third day of your third year in emerg [and that]…if you let chaos happen, it will; …you may even invite chaos if you lose your confidence and…let there be…chaos.* Ashley claimed that this type of *ambiguity* can be *intimidating* for inexperienced nurses and that gaining the confidence to manage it requires *experiencing it and surviving it…with a reasonable outcome.* She then outlined how to mitigate chaos through seeking calmness using foundational principles such as airway, breathing, and circulation, and checking for potential equipment error: *…if your patient has changed their sats [oxygen saturation], go back to the airway. Is it patent...are they breathing…do you have good oxygenation? Go back to circulation. …check your equipment…make sure everything is…working correctly. …put in those basics every single time and then you gain your confidence.*

My Recommendations. Given the impact of advancing and emerging technologies on rural RNs' need to consistently engage in just-in-time learning activities, I recommend that staff support and empower each other in their just-in-time learning activities. For individuals, it is vitally important to know who or what are your best learning resources and how to efficiently access them in-the-moment.

Clinical Nurse Educators

Participants offered four recommendations for CNEs. They are as follows: develop quick access tools for just-in-time learning, leverage individually accessible online continuing education opportunities, provide tailored on-site continuing education opportunities, and emphasize how to use existing online resources.

Develop Quick Access Tools for Just-In-Time Learning. Shelly (proficient RN)

recommended desktop icons as an online mode to support quick access to needed just-in-time

learning resources as she had previously been provided by the CNE in an urban intensive care

unit (ICU): *…in our cardiac ICU, we…had a…super strong educator…[who] made…a*

cardiology icon, where you clicked on it, and it opened everything that we needed very fast. To

support quickly refreshing one's knowledge about the sequence of interventions for managing

high acuity patients, three participants recommended that *flip charts* containing important

information (i. e. ACLS algorithms, fluid resuscitation procedures for burns, etc.) be available in

emergency trauma rooms (either on an easel or on the wall). Shelly described how this type of

readily accessible resource *has improved her ability to focus on the tasks [she needed to do].*

Tess (a proficient RN) contended that *having these types of resources readily available in*

chaotic situations has help[ed] a ton. Chantal (a competent RN) explained how she has used

ACLS charts on the trauma room wall in the ED as a learning tool (during quiet night shifts or

quickly in-the-moment) for reviewing how to manage potential emergent situations: *…if I'm*

alone on nights I will sit there [and] read them. …Or…if I have a cardiac patient…I'll read

it…to…give me a refresh. …It's right there on the wall. Just clear. …I've read through the brief

diagram, took me two seconds, and I'm good.

Chantal questioned why the CVA protocol is so long, which has caused her to feel

overwhelmed when providing stroke care, and why the pictures found in it are not available on

the trauma room wall to support assessing patients during high acuity scenarios. She described

her concerns this way: *We have a stroke package…there's about 50 pages…[on] some pages is a*

picture and you have to ask the patient what…it is, and…I'm like 'why don't we have this in the

room on a big poster?

Leverage Individually Accessible Continuing Education. Due to the long wait times

to engage in continuing education learning opportunities and the logistics of attending these off-

site courses, Daisy (a proficient RN) pointed out the benefits of taking courses offered by her

CNE over Zoom: *I'd rather do a Zoom class and have it…more often available than have to wait*

six months or a year to take one and…find a babysitter and go to town and get the course. Daisy

also requested the provision of pre-printed versions of PowerPoint presentations to enable adding

her own notes to the CNE's material. She stated: *…when they print…a PowerPoint before the*

course, and you…go through the PowerPoint with them and…make little notes…makes the

course even that much better.

        Provide Tailored On-Site Continuing Education. All participants recommended that

CNEs should be on-site consistently to support their just-in-time learning needs. Ashley (an

expert RN) suggested that optimal support from a CNE would involve being *on site and*

available and functional enough to…step in and…either…track through the first time you do [a

task], or [support]…the concept of see one, do one, teach one. Similarly, Ned (expert RN)

stressed the importance of the CNE being available to staff on the unit and seeking out when

just-in-time learning is needed as previously addressed in the subtheme *Who/What Resources*

Can I Access Quickly? Likewise, Mel (proficient to expert RN) recommended that a consistently

present CNE should ask the staff their learning needs and then provide the relevant education.

She stated: *…if…our department had somebody there consistently and finding out from…the*

staff…the learning gaps. Daisy (a proficient RN) too contended that polling staff about their

learning needs would *absolutely* be a good strategy to support decisions for providing

appropriate learning opportunities.

        Emphasize the Benefits of Existing Online Educational Resources. Tess (proficient

to expert RN) highlighted the importance of RNs being taught where to access evidence-based

online resources. She identified four *resources (i. e. Lippincott Procedures and [Lippincott]*

Advisor, Lexicomp, and the *parenteral manual)* as her go-to resources to support practicing

capably and safely. She explained: *...I can't go through all of TNCC...before I...go into a*

trauma. ...it's whether I need to review...and how can I do it in the most efficient way possible?

...knowing how to use those resources efficiently and proficiently makes a huge difference.

My Recommendations. To address the inequitable allocation of CNEs in rural

hospitals across the province of Alberta, I recommend that CNEs themselves continue to

emphasize to administrators and policymakers the unique just-in-time and continuing education

needs of rural RNs. I also suggest developing educational resources and activities that attend to

the five types of informal learning required by rural RNs during their just-in-time learning

activities: tacit (routine and experiential learning by oneself), reactive (learning by focusing on

past experiences), directed (learning from others – directed by an expert), guided (learning from

others – guided by a peer), and deliberative (learning with others on the team).

Nurse Managers

Participants aimed three recommendations toward nurse managers, which include the

need to recruit and choose experienced RNs to mentor new hires, provide tailored orientations

for new hires, and support staff to be solution focused. Participants perceived that these solutions

could set new hires up for success, while also strengthening nursing teams.

Recruit and Choose Experienced RNs to Mentor New Hires. To effectively support

newly hired RNs, Shelly (proficient RN) recommended that experienced RNs be asked if they

are interested in mentoring new hires, as not all RNs are effective mentors, nor are all RNs

interested in mentoring: *I said [to the nurse manager]...you need to ask the staff who's interested*

in having a [new nurse to mentor] because not everyone's comfortable, not everyone's interested

in it, not everyone's a good mentor. She then suggested that new hires be buddied with *strong*

staff during their orientation shifts to support their success. To this point she related the

following: *...you...cherry pick...who...to buddy people with. And then you just put your new staff*

213

on their shifts. …you would just set everyone up for such great success.

Likewise, Mel (a proficient RN) and Tina (competent RN) suggested that new hires be buddied with experienced RNs or assigned experienced support persons. Mel asked that management make *…sure that we…have…an experienced nurse with a novice nurse.* From a new hire's perspective, Tina recommended that having a *support person* to consult with would have improved her ability to manage the variety of learning situations she had experienced in the generalist-model rural hospital workplace. She stated: *…having…an identified… support person …you could talk to, even after the fact...[to ask] 'what would you suggest…in this situation?'*

Provide Tailored Orientations for New Hires. Four participants suggested that orientations for new hires be tailored to meet their learning needs. Daisy and Shelly (proficient RNs) called attention to the need to ensure that new hires, no matter their previous experience, be oriented to all areas of the hospital and the equipment in these areas to support the rare occasions they might be asked to assist during an emergency scenario. Daisy commented: *…if you're gonna have people on acute care helping in emerg…, you should…give them a…tour of the emerg, so they're familiar with where things are.* Shelly observed that her previous experience had been perceived by staff as an indication that she inherently knew the nuances of the rural hospital workplace. She recommended that, when orienting a new hire, be sure to include information about *the daily workflow [and]...where equipment is kept...because every time we look and search, it takes away time that we could be doing something else.*

In one rural hospital workplace with a significant nursing shortage, Tina (advanced beginner RN) noted that new hires had been expected to work in the ED without the proper education using a *sink or swim* philosophy: *…it was more…a staffing issue…just get them on the floor as quickly as you can.* She recommended that new hires be provided appropriate education to support building their confidence levels prior to being expected to work in the ED and to be

walked through the types of patients and scenarios they might encounter. She stated: *…there should…be…a basic set education…at the very least…ACLS…CTAS [and ensure to]…go over…some of the basic emergency stuff…until…you feel confident.*

To learn the strengths and learning needs of new hires, Ned (expert RN) highlighted that the role of the CNE should include being a part of the hiring process, as well as providing new hire orientation follow-up, as she had done in a previous CNE role. She stated: *When…my role was educator [in a different zone],…it was phenomenal because you see them right from the interview process, you learn…their strengths…where they need some work, and…do the orientation with them. You're doing all the cert [certification] courses within.* She claimed that the benefits of this kind of optimal learning support are that *you get…a stronger team built and… don't have the young nurses leaving because they are not supported.*

Support Staff to Be Solution-Focused. Shelly (proficient RN) suggested that nurse managers assist staff to be solution-focused to solve just-in-time learning issues. She stated: *…when you come to them [nurse managers] with…a problem, I think it's important…they say, 'okay, so what do you think you need…?' …So that the staff turn the problem into…a solution.*

My Recommendations. For nurse managers, I recommend the following strategies to support the just-in-time learning activities of rural RNs. Aligning with the suggestions I offered in my previous research (Smith & Vandall-Walker, 2017), I advise continuing to request funding to support orientation and mentorship programs in the rural hospital workplace, as well as the hiring of full time CNEs or CRNs, and that mentorship education and incentives be offered to senior RNs who volunteer to mentor new RNs. In addition, to promote retention of RNs in the rural hospital workplace, I suggest whenever possible, asking newly hired RNs if they prefer to work on one unit or as a generalist, followed by offering them the appropriate educational opportunities to support their choice of practice.

215

Administrators and Policymakers

Participants' recommendations for rural hospital administrators and policymakers included the following: ensure access to on-site CNEs, CRNs, and other disciplines; provide adequate access to online educational resources; and acknowledge rural nursing as a specialty. Participants contended that providing these types of just-in-time learning resources could support them to confidently practice capably and safely, and that acknowledging their rural practice expertise would be a means to empower and value them.

Ensure Equitable Access to On-Site CNEs and CRNs. All participants resoundingly underscored the need for access to skilled and present on-site CNEs. Jane (an expert RN), who had been working without a CNE for several months, contended that having access to a full-time CNE would better support her just-in-time learning activities. When asked what would make things better, she described her situation this way: *Having an educator…full time [who] you can access would be ideal, even if it is just during office hours being able to fire off an email and saying, 'hey, can you review the DKA protocol to me, it makes no sense how you hook these lines up. I don't get it and it's confusing.'* She went on to state that the educator position in the rural hospital workplace in which she worked remained vacant and that the staff had been *frankensteining* (piecing together) their continuing education activities. She also recalled that when they did have access (once per week) to a *roaming* CNE (someone responsible for more than one rural hospital), they were able to participate in on-site workshops tailored to their learning requests. These workshops supported her ability to think and work through scenarios with her peers outside of high acuity situations with patients: *…about five years ago, the educator…would…run drills for the day on whatever we wanted. …She was there once a week to go through things when it's outside of the heated elements where you just have to do, where you can actually…hammer out ideas.*

216

Lucy (an expert RN) thought that a full-time CNE could support new RNs in learning their role as opposed to depending on her guidance, an activity that has taken her away from her administrative nursing duties and responsibilities: *…we need to have a full-time educator…on our floor because…the new nurses could be asking the educator a lot of those questions, instead of taking me away from my…nurse duties.*

To capitalize on efficient learning and to address the limited resources and time available to support just-in-time learning in the rural hospital workplace, Tess (proficient to expert RN) recommended that CRNs be hired to work on-site in rural hospitals. She had worked in a facility in which there was an on-site CRN and identified this kind of educational support as enabling deep, timely learning for any type of situation. She explained: *…there's nothing that compares to…expert…lived experience. …a lot of times, it's…go, go, go. So, given…limited resources and…time,…having someone who can go through that with you makes it more efficient than having to access all the individual resources…yourself and then piecing [them] together.*

Provide Access to Specialty Disciplines. When asked what would make things better to support her just-in-time learning activities, Daisy (proficient RN), who had previously worked on an urban specialty unit, requested better access to other disciplines (i. e. pharmacists, respiratory therapists, and residents). She expressed: *…you have a code in the city, you've [got] respiratory…ICU…residents. …here, respiratory [and] residents don't exist. …in a perfect world, it'd be more people, more disciplines because then you have those people to draw on.*

Provide Adequate Access to Online Educational Resources. Participants' recommendations surrounding the provision of online resources were focused on timely access to efficient, user-friendly resources. Jane's (expert RN) wish is to have *proper Wi-Fi so [she can have] access [to] faster computers that [do not] take five minutes to log into.* Ned (expert RN) acknowledged that, although excellent learning resources are available on AHS Insite, *they're*

not super accessible because they are not linked to other key words. Like Ned, Mel (proficient to expert RN) and Ashley (expert RN) recommended providing a *better search engine* and *easy linkages* that would enable quick, easy access to resources.

To promote quick access to online just-in-time learning resources, Shelly (proficient RN) suggested the provision of *split screen* or dual monitor (*two screen*) computers to enable simultaneously accessing physician orders or *telehealth* and the needed learning resources. Chantal's greatest wish was to have the *parenteral manual* on her PDA. In addition, Shelly recommended the provision of easy to manipulate *roaming computers*. However, she also cautioned that managing the stiff brakes and difficult steering of these roamers can create barriers to their use. Shelly suggested that staff be involved in the decision-making about the placement of stationary or roaming computers by asking the following questions: *…do you want to have…[a] centralized one that…roams between all…of the emerg or do you want to have one on the wall of each room or is that too many and too cluttered?…there has to be a balance.*

Acknowledge Rural Nursing as a Specialty. Two participants contended that rural nursing should be acknowledged as its own specialty. Jane (expert RN) suggested that development of a rural nursing certificate is good acknowledgement of how challenging rural nursing is. She expressed: *…acknowledgement of the difficulties of rural nursing would be nice. …It takes a special person to…do it, and it is a specialty.* Likewise, Tina (competent RN) implied that there are urban misunderstandings regarding the acuity levels of rural patients, the lack of resources in the rural hospital workplace, and what those challenges entail for rural RNs. She explained: *…there's…a thought process…that you don't get as much acute stuff or [that]… it's…quickly ship them [patients] out, so you don't have to deal with them. And…that's not true…you have to know more because you don't know [who's] walking through your door, and you have…limited resources compared to…a bigger center.*

My Recommendations. Given the expectations of the rural RN role, I suggest that

equitable funding be provided to hire full-time CNEs or CRNs in all rural hospital workplaces

across the province. I also recommend that administrators and policymakers seek out facilities in

the province, wherein rural RNs are supported by full-time CNEs or CRNs, to understand what is

working well in these facilities and to then build upon their strengths. As Connect Care is

currently being rolled out across the province, it is apparent that the infrastructure to support

access to evidence-based online learning tools is underway. Nonetheless, I advise that this

infrastructure be assessed to determine its adequacy, and if found to be inadequate, that

administrators advocate with the provincial government for increased access to broadband Wi-Fi

in rural communities. I also suggest that rural RNs who may need to use Connect Care in a

different area from which they are accustomed be provided appropriate education about its use.

Moreover, I endorse collaborating with researchers to generate quality improvement/assurance

benchmarks for rural RNs' just-in-time learning activities that can serve to provide evidence to

support sustainability of adequate blended educational resources in the rural hospital workplace.

Post-Secondary Education Institutions

Participants aimed two recommendations toward post-secondary education institutions.

One, the importance of providing clinical practica in the rural hospital workplace for all nursing

students. Two, when asked their thoughts about the need for a stackable rural nursing certificate,

participants' responses were a resounding '*yes*'.

Provide Clinical Practica for Nursing Students in the Rural Hospital Workplace.

To develop good foundational experiences for new graduate nurses like those learned in

medicine and pharmacy programs, Tess (proficient to expert RN) suggested that nursing students

be exposed to the rural hospital workplace during their nursing programs. *…physicians…have to*

do rural placements, pharmacists have to do rural placements, so I…don't think it would be out

of line to suggest that it would be good…to have rural exposure in nursing school as well. She

recommended *to anybody…going through nursing school to consider [rural]…as a*

preceptorship opportunity, emphasizing that it could also promote rural RN recruitment.

From an RN perspective, working with students can assist with keeping one's

knowledge current because students are expected to consistently access and question policies and

protocols. Mel (proficient to expert RN) underscored the benefits of working with students:

…students help to…keep you fresh and…up to date on…things. …students…have to look up

every single med [medication] and…question every single thing that [they're] doing…so I find

that having students really does help keep… you're learning up as well.

Make Widely Available a Stackable Rural Nursing Certificate. Participants who

were asked their thoughts about whether a stackable rural nursing certificate aimed toward

current rural hospital nursing practices would support their just-in-time learning activities

resoundingly supported the idea. They offered suggestions of content to include and asked

questions about how the practical aspects could be implemented.

Ashley (expert RN) recommended that one element of the certificate should address

how to effectively enact the charge RN role: *I think what would be useful…[is] how do you*

develop…that calm…seeing big picture scenarios…stuff? For Ric (competent RN), access to

online learning in the form of stackable modules would be beneficial in expediting her ability to

learn about obstetrical care because she has had limited access to a CNE and obstetrical learning

resources. She stated: *…we have a hard time finding educators for our site. So, then we don't*

have a lot of opportunities…to…recertify things. For our maternity…for a staff member to be

fully trained and independent…takes…almost a year…modules and… then the buddy shifts.

So…those courses would be very beneficial. However, she also questioned how practical aspects

of the certificate would be offered: *…how could [we]…carry forward some of those clinical*

aspects of it? …Would it be possible to have…buddy shifts in the city…[to] get the exposure?

Jane (expert RN) described how a stackable certificate could support her just-in-time learning activities: *I would be able to access what I need in a timely fashion and or well DKA okay, I haven't done a DKA for a while…If it's…a module that I go through and can…spend some time with on my own, I think it's great.* She also emphasized *…it's [been] a long time coming.* Similarly, Ashley (expert RN) noted that blended educational resources like the blended basic life support (BLS) course she was currently engaged in would be beneficial because she could work through the online modules when she had time and then take part in the in-person practical skills in a shorter time frame. She stated: *…they would work great because like this…BLS course is a fantastic example. I've been able to do the online [portion], which was a combination of readings, video, and quiz modules, as I had the opportunity, over five-day shifts. Now I have a 90-minute window [to]…do the hands-on assessment and…have a conversation and integrate the online learning.* She also contended that it would increase availability to these courses and, in turn, more quickly develop and advance people's skills: *…that blended learning scenario allows for more people to move through that required learning.* However, Ashley also questioned if blended learning could support the deep learning that occurs when debriefing or chatting with other nurses. She queried: *…there's a lot of deep learning that turns into long term confidence and…experience that you get from those kinds of in-person chats with more experienced nurses. …I don't know how much blended learning would work for that.*

Mickey's (expert RN) response when asked about a stackable nursing certificate was… *I think they [stackable courses] would be great – I think anything like that is fantastic.* She also outlined the complexity and diversity of the rural generalist practice and that *…there's never enough…educational pieces…*to support rural nursing because *rural adds its own to everything …it's an extra specialty.* Mickey recommended that *ECG interpretation, fetal health*

221

surveillance, labor and delivery complications, cardiac protocols, as well as *the weird little things you [have to] learn* would be good topics to include. Similarly, Choco suggested that the modules should include how to do the *hands-on* tasks of procedures used for emergent situations: *how to use a syringe pump..., manage an airway..., [or place] synchronized cardioversion...pads*.

Tess stated that a stackable nursing certificate is *a great approach* to support continuing education. She went on to describe the breadth of knowledge needed to practice in the differing rural sites this way: *With...how broad rural nursing can be, I don't think...one course is sufficient, just because there's so many different things that you have to draw on. And...in different rural centers, there's different needs and different contexts.* She then emphasized the insufficiency of only providing one broad course: *...having a broad-brush stroke wouldn't be as effective either.* Next, she highlighted the merits of tailoring learning opportunities to each rural context: *...having the different things...stackable could tailor it but also...help afford the different scenarios and different situations and skill sets and information that someone might need working in a smaller site compared to a bigger site.*

My Recommendations. The role of the rural RN is complex and diverse; therefore, I recommend that nursing degree programs ensure to attend to not only the tacit, reactive, directed, guided, and deliberative learning needs of nursing students, but also to their ability to be innovative, creative, and resourceful when engaging in just-in-time learning. Rural RNs need to know how to identify their best human, online, and hardcopy resources, as well as how to access them quickly and efficiently.

Recommendations for Future Research

Stemming from the findings of this study, I suggest that further research studies be conducted. Additional quantitative and qualitative studies are needed to extend and deepen the understandings uncovered in this study about the strategies and processes rural RNs' use when

222

engaging in just-in-time learning activities. Further exploration of the three differing RN staffing models being used in the rural hospital workplace are needed to understand the influence of these differences on RNs' just-in-time learning activities. Given the inequities of human educational resources available within the different rural hospital workplaces, specifically CNEs and CRNs, further studies are needed to understand how to mitigate these policy and funding inequities in ways that can attend to and support rural RNs' just-in-time learning needs. Further exploration into the infrastructure supporting the availability of evidence-based online resources (which now includes Connect Care) in the rural hospital workplace is required to find ways to mitigate these workplace challenges in ways that can address and support rural RNs' just-in-time learning needs. As this study was aimed solely at RNs in the rural hospital workplace, additional studies into the just-in-time learning activities of other professions in the rural hospital workplace may add to the theory base of just-in-time learning and to the body of knowledge on workplace learning. Furthermore, a future study should be conducted to ascertain if the recommendations provided by participants in this study have influenced the just-in-time learning activities of RNs in the rural hospital workplace.

The recommendations stemming from this study are by no means exhaustive of the possibilities to support the just-in-time learning activities of RNs in the rural hospital workplace. Nonetheless, they do offer a starting point for building on existing strengths associated with RNs' just-in-time learning activities in the rural hospital workplace, as well as provide a launch pad for conducting further research.

Conclusion

This study originated from an overarching research question about the extent to which RNs in the rural hospital workplace perceive that blended educational resources support their just-in-time learning activities. The core theme that emerged, *It Varies!* was generated from the

223

data provided by one male and 12 female participants in 14 individual interviews across 12 different rural hospital workplaces in Alberta, Canada. *It Varies!* serves as one proposed description of the blended educational resources that support RNs' just-in-time learning activities in the rural hospital workplace. In addition, my conclusions about this study are a product of the findings, which I interpreted within the context of the available literature.

The findings from this study are significant because they offer new findings and numerous suggestions for rural stakeholders that can assist them in generating strategies to support rural RNs' just-in-time learning activities, and in turn, their confidence in providing patient care capably and safely. These recommendations are aimed at rural practice, education, administration, and policy initiatives. In addition, the findings begin to fill the gap in the existing literature about the just-in-time learning activities of RNs in the rural hospital workplace.

New findings related to the context of this study include the three types of RN staffing models now being used within rural hospital workplaces in the province of Alberta, as opposed to the two I revealed in my previous research. In addition, I learned that some rural facilities are staffed with more than one CNE. Moreover, another new finding is that in some rural hospital workplaces, CRNs are employed to provide staff with just-in-time learning support. These findings are significant because the participants who had been provided optimal just-in-time learning support by on-site CNEs or CRNs perceived being confidently able to provide capable and safe patient care, whereas those who had not, expressed feeling stressed, overwhelmed, and lacking confidence in their nursing practices. The findings contribute to the body of knowledge about workplace learning. Two new types of informal learning that I termed *directed learning* and *guided learning* emerged during this study, which capture the actions participants engaged in when being directed or guided in their just-in-time learning. These new types contribute to the theories and knowledge about informal learning.

224

At the practice level, rural RNs who participated in this study may have learned new information about their own practices that can assist them with honing their strategies for engaging in just-in-time learning activities using blended educational resources and thus, their ability to confidently practice capably and safely. Furthermore, participants made suggestions for rural staff to support them in how to use continuing education to strengthen their skill sets and thus, their ability to manage just-in-time learning activities; mentor others to support their just-in-time learning activities; and embrace chaos as a way of learning how to manage complex and chaotic situations. Moreover, generating knowledge about how to improve the educational supports for rural RNs based on participants' perceptions of what would be helpful to them may have been empowering to them, and in turn, help to retain them in the rural hospital workplace.

Beyond individual participants, new findings about the intrinsic cognitive processes that rural RNs use to access and choose blended educational resources and engage in just-in-time learning actions, emerged during this study. Comprehending how participants used these decision-making processes during their just-in-time learning activities for a range of practice situations enabled me to generate recommendations for rural CNEs and nurse managers about teaching and learning ideas that can support the just-in-time learning activities of rural RNs. Moreover, participants offered their own suggestions for CNEs about how to support rural RNs' just-in-time learning activities: develop quick access tools for just-in-time learning, leverage individually accessible continuing education, provide tailored on-site education, and emphasize the benefits of existing educational resources. Likewise, they recommended that nurse managers carefully recruit and choose experienced RNs to mentor new hires, provide new hires with tailored orientations, and support staff to be solution focused.

Understanding the blended educational resources that best support rural RNs to engage in just-in-time learning activities in a variety of situations has enabled me to offer rural hospital

administrators and policymakers with suggestions for how to improve the allocation and sustainability of blended educational resources in the rural hospital workplace. These suggestions align with participants' emphatic recommendations that rural hospital administrators and policymakers ensure that all rural RNs have appropriate access to on-site CNEs or CRNs, as well as online educational resources. Some participants also requested that rural nursing be acknowledged as its own specialty.

At the post-secondary education level, one participant suggested that to support all RNs in understanding the complexity and diversity of the rural RN role, all degree nursing students should participate in clinical practica in the rural hospital workplace. Several participants emphatically stated that continuing education in the form of a stackable rural nursing certificate aimed at current RN practices in the rural hospital workplace would be a good way to support rural RNs' diverse just-in-time learning needs.

From a broader perspective, publishing the findings will extend the knowledge I have generated in this study to a far wider audience of RNs and healthcare practitioners. Moreover, the findings also provide a basis for conducting further research. However, as with any research study, this study is not without its limitations, which are related to the sample and its lack of generalizability (see Strengths and Limitations section). Nevertheless, it is conceivable that the perceptions of the participants in this study about the phenomenon of just-in-time learning may resonate with RNs in other contexts of nursing or rural RNs and practitioners in other hospitals within Canada, which may inform and support their practices, thereby making the findings transferable to them. Overall, the findings of this study contribute significantly to the body of knowledge about the just-in-time learning activities of RNs in the rural hospital workplace.

References

AI Commons. (n.d.). *5-D cycle of appreciative inquiry.*

https://appreciativeinquiry.champlain.edu

Alberta Health Services. (2023a). *Information for health professionals: Education.*

https://www.albertahealthservices.ca/info/Page16979.aspx

Alberta Health Services. (2023b). *Rural health.*

https://www.albertahealthservices.ca/info/page878.aspx

Ali, S., & Kelly, M. (2018). Ethics and social research. In C. Seale (Ed.), *Researching society*

and culture (pp. 43-62). Sage.

Argyris, C., & Schön, D. (1974). *Theory in practice.* Jossey-Bass.

Arksey, H., & O'Malley, L. (2003). Scoping studies: Towards a methodological framework.

International Journal of Social Research Methodology, 8(1), 19-32.

https://eprints.whiterose.ac.uk/1618/1/Scopingstudies.pdfAnderson

Bandura, A. (1977). Self-efficacy: Toward a unifying theory of behavioral change.

Psychological Review, *84*(2), 191-215.

https://www.academia.edu/10120982/Bandura1977

Baylak, A., Dublin, N., Eastwood, C., Gill, S., Lee, J., Mattu, R., Phelan, P., Palombi, S.,

Wilcox, W., & Wilson, L. (2020). Telehealth in rural Canada: Emergent technologies to

address historical issues. *Canadian Journal of Nursing Informatics, 15*(2).

https://cjni.net/journal/?p=7188

Bell, L. (2020). Just-in-time learning during a crisis. *American Journal of Critical Care, 29*(4),

270. https://doi.org/10.4037/ajcc2020430

Benner, P. (1982). From novice to expert. *American Journal of Nursing, 82*(3), 402-407.

https://journals.lww.com/ajnonline/Citation/1982/82030/From_Novice_To_Expert.4

Benner, P. (1984). *From novice to expert: Excellence and power in clinical nursing practice.* Addison-Wesley. https://www.researchgate.net/publication/232117087

Benner, P. (2004). Using the Dreyfus model of skill acquisition to describe and interpret skill acquisition and clinical judgment in nursing practice and education. *The Bulletin of Science, Technology and Society Special Issue: Human Expertise in the Age of the Computer, 24*(3), 188-189. https://www.researchgate.net/publication/249747539

Bierema, L. L., & Eraut, M. (2004). Workplace focused learning: Perspective on continuing professional education and human resource development. *Advances in Developing Human Resources, 6*(1), 52-68. https://www.researchgate.net/publication/237742006_Workplace-Focused_Learning_Perspective_on_Continuing_Professional_Education_and_Human_Resource_Development

Blaschke, L. M. (2012a). E-learning and self-determined learning skills: Using Web 2.0 to support the development of self-determined learning skills. In S. Hase & C. Kenyon (Eds.), *Self-determined learning: Heutagogy in action* (pp. 1-17). Bloomsbury Academic. https://www.researchgate.net/publication/268684147_E-learning_and_self-determined_learning_skills

Blaschke, L. M. (2012b). Heutagogy and lifelong learning: A review of heutagogical practice and self-determined learning. *The International Review of Research in Open and Distributed Learning*, *13*(1), 56-71. https://doi.org/10.19173/irrodl.v13i1.1076

Blaschke, L. M. (2018). Self-determined learning (heutagogy) and digital media: Creating integrated education environments for developing lifelong learning skills. In D. Kergel, B. Heidkamp, P. Telléus, T. Rachwal, & S. Nowakowski (Eds.), *The digital turn in higher education* (pp. 129-140). Springer. https://doi.org/10.1007/978-3-658-19925-8_10

Blaschke, L. M. (2019). The pedagogy–andragogy–heutagogy continuum and technology-supported persona learning environments. In I. Jung (Ed.), *Open and distance education theory revisited: Implications for the digital era* (pp. 75–84). Springer. https://www.researchgate.net/publication/333301490

Blaschke, L. M., Bozkurt, A., & Cormier, D. (2021). Learner agency and the learner-centred theories for online networked learning and learning ecologies. In S. Hase & L. M. Blaschke (Eds.), *Unleashing the power of learner agency.* EdTech Books. https://www.researchgate.net/publication/352902663_Learner_agency_and_the_learner-centred_theories_for_online_networked_learning_and_learning_ecologies

Blaschke, L., & Brindley, J. (2011). Establishing a foundation for reflective practice: A case study of learning journal use. *European Journal of Open, Distance, and E-Learning*, 1-9. https://www.researchgate.net/publication/253650847

Blaschke, L. M., & Brindley, J. (2015). Using social media in the online classroom. In M. Ally & B. H. Khan (Eds.), *International handbook of e-learning volume 2: Implementation and case studies* (1st ed., pp. 1-13). Routledge. https://www.researchgate.net/publication/268684323

Blaschke, L. M., & Hase, S. (2016). Heutagogy: A holistic framework for creating 21st century self-determined learners. In B. Gros & M. M. Kinshuk (Eds.), *The future of ubiquitous learning: Learning designs for emerging pedagogies* (pp. 25-40). Spring Verlag. https://www.researchgate.net/publication/280717279

Blaschke, L. M., & Hase, S. (2019). Heutagogy and digital media networks: Setting students on the path to lifelong learning. *Pacific Journal of Technology Enhanced Learning, 1*(1), 1-14. https://doi.org/10.24135/pjtel.v1i1.1

Booth, R. G., Strudwick, G., McBride, S., O'Connor, S., & Solano López. (2021). How the

nursing profession should adapt for a digital future. *BMJ*, 373: n1190.

https://www.bmj.com/content/373/bmj.n1190

Bradley, K., Billings, D. M., & Kowalski, K. (2020). Just-in-time learning and QR codes: A

must-have tool for nursing PD specialists. *The Journal of Continuing Education in

Nursing, 51*(7), 302-303. https://doi.org/10.3928/00220124-20200611-04

Brandenburg, D. C., & Ellinger, A. D. (2003). The future: Just-in-time learning expectations and

potential implications for human resource development. *Advances in Developing Human

Resources, 5*(3), 308-320. https://journals.sagepub.com/doi/10.1177/1523422303254629

British Columbia College of Nurses & Midwives. (2023). *Virtual care.*

https://www.bccnm.ca/RN/learning/virtual_care/Pages/Default.aspx

Brown, B., Roberts, V., Jacobsen, M., Hurrell, C., Travers-Hayward, M., Neutzling, N.,

Templeman, J., Steeves, M., Hendrickson, R., Luinstra, D., Humphreys, L., Dunham, L.,

& Maciach, M. (2021). Ethical use of technology in digital learning environments:

Graduate student perspectives, volume 2. *Open Education Alberta.*

https://openeducationalberta.ca/educationaltechnologyethics2/

Burman, M. E., Proctor, J., & Moody, E. J. (2021). ECHO: A model for professional

development in nursing through learning networks. *The Journal of Continuing Education

in Nursing, 52*(4), 198-204. https://doi.org/10.3928/00220124-20210315-09

Canada Health Infoway. (2020). *Report: 2020 national survey of Canadian nurses: Use of

digital health technology in practice: Quantitative market research report.*

https://cnia.ca/resources/Documents/National%20Survey%20of%20Canadian%20Nurses
%20Use%20of%20Digital%20Health%20Technology%20Report.pdf

Canadian Association for Rural and Remote Nursing. (2020). *Rural and remote nursing practice

in Canada: An updated discussion paper.* CARRN [Unpublished report].

https://www.carrn.com/images/pdf/CARRN_RR_discussion_doc_final_LR-2.pdf

Canadian Council of Registered Nurse Regulators. (2013). *Competencies in the context of entry-level registered nurse practice.* https://www.ccrnr.ca/assets/jcp_rn_competencies_2012_edition.pdf

Canadian Institute for Health Information. (2019). *Nursing in Canada, 2018: A lens on supply and workforce.* https://www.cihi.ca/en/access-data-reports/results?query=nursing+trends&Search+Submit=

Canadian Institute for Health Information. (2020). *Nursing in Canada, 2020 — Data tables.* https://www.google.com/search?client=firefox-b-d&q=cihi+2020+nursing+in+Canada+2020+data+tables

Canadian Institute for Health Information. (2023). *Registered nurses – 2022 Data tables.* https://www.cihi.ca/en/registered-nurses

Canadian Nurses Association. (2000). *A national framework for continuing competence programs for registered nurses.* https://www.docplayer.net/7417730-A-national-framework-for-continuing-competence-programs-for-registered-nurses-september-2000.html

Canadian Nurses Association. (2015). *Framework for the practice of registered nurses in Canada 2015.* https://www.cna-aiic.ca/en/nursing/regulated-nursing-in-canada/rn-practice-framework2

Canadian Nurses Association. (2020). *CIHI data reveals more nurses overall but fewer of them working in nursing.* https://www.cna-aiic.ca/blogs/cn-content/2020/05/29/cihi-data-reveals-more-nurses-overall-but-fewer-of

Canadian Radio-television and Telecommunications Commission. (2020). *Communications monitoring report.* https://crtc.gc.ca/pubs/cmr2020-en.pdf

Canadian Triage Acuity Scale National Working Group, & Canadian Association of Emergency

 Physicians. (2013). *Applying CTAS to adults: Assigning CTAS scores using CEDIS chief*

 complaint and modifiers: Version 2.5b. CTAS National Working Group & CAEP.

Carper, B. (2009). Fundamental patterns of knowing in nursing. In P. G. Reed & N. B. Crawford

 (Eds.), *Perspectives on nursing theory* (5th ed., pp. 378-384). Wolters Kluwer/Lippincott

 Williams & Wilkins.

Carter, B. (2006). 'One expertise among many' -- working appreciatively to make miracles

 instead of finding problems: Using appreciative inquiry as a way of reframing research.

 Journal of Research in Nursing, 11(1), 48-63.

 https://doi.org/10.1177/1744987106056488

Cervero, R. M., & Daley, B. J. (2016). Continuing professional education: A contested space.

 New Directions for Adult and Continuing Education, 151, 9-18.

 https://onlinelibrary.wiley.com/doi/10.1002/ace.20191

Cheng, Y-T., Liu, D. R., & Wang, V. J. (2017). Teaching splinting techniques using a just-in-

 time training instructional video. *Pediatric Emergency Care, 33*(3), 166-170.

 https://www.pec-online.com

Cohen, L., Manion, L., & Morrison, K. (2018). *Research methods in education* (8th ed.).

 Routledge.

College of Registered Nurses of Alberta. (2019). *Entry-level competencies for the practice of*

 registered nurses. https://nurses.ab.ca/media/5ndpyfar/entry-level-competencies-for-the-

 practice-of-registered-nurses-mar-2019.pdf

College of Registered Nurses of Alberta. (2021). *Scope of practice for registered nurses.*

 https://www.nurses.ab.ca/media/ruwb0xql/scope-of-practice-for-registered-nurses-mar-

 2021.pdf

Colman, A. M. (2009). Declarative knowledge. *Oxford dictionary of psychology (3rd ed.).*

Oxford University Press.

https://www.oxfordreference.com/display/10.1093/acref/9780199534067.001.0001/acref-

9780199534067

Colman, A. M. (2015). Declarative knowledge. *Oxford dictionary of psychology (4th ed.).*

Oxford University Press.

https://www.oxfordreference.com/display/10.1093/acref/9780199657681.001.0001/acref-

9780199657681-e-2104

Community, 10(1), 36-45. https://pubmed.ncbi.nlm.nih.gov/11882088/

Cooke, A., Smith, D. M., & Booth, A. (2012). Beyond PICO: The SPIDER tool for qualitative

evidence synthesis. *Qualitative Health Research, 22*(1), 1435-

1443. https://www.researchgate.net/publication/230565751_Beyond_PICO_the_SPIDER

_tool_for_qualitative_evidence_synthesis

Cooperrider, D. L., & Godwin, L. N. (2012). Positive organization development: Innovation-

inspired change in an economy and ecology of strengths. *The Oxford Handbook of

Positive Organizational Scholarship.*

https://www.researchgate.net/publication/265150118_Positive_Organization_Developme

nt_Innovation-inspired_Change_in_an_Economy_and_Ecology_of_Strengths

Cooperrider, D. L., & Srivastva, S. (1987). Appreciative inquiry in organizational life. In M.

Parker Follet & S. Rosen (Eds.), *Research in Organizational Change, 1,* 129-169.

https://www.oio.nl/wp-

content/uploads/APPRECIATIVE_INQUIRY_IN_Orgnizational_life.pdf

Cooperrider, D. L., & Whitney. (2005). *A positive revolution in change: Appreciative inquiry.*

https://www.taosinstitute.net/files/Content/5692967/whitney_Appreciative-Inquiry-

Positive-Revolution-in-Change.pdf

Covenant Health. (2023). *Hospitals & care centres.* https://www.covenanthealth.ca/hospitals-care-centres

Crawford, M. L. (2019). *Blooming where one is planted: Understanding flourishing among rural nurses* (Doctoral dissertation, University of Northern Colorado). https://digscholarship.unco.edu/cgi/viewcontent.cgi?article=1557&context=dissertations

Creswell, J. W. (2007). *Qualitative inquiry & research design: Choosing among five approaches.* Sage.

Curran, V., Gustafson, D. L., Simmons, K., Lannon, H., Wang, C., Garmsiri, M., Fleet, L., & Wetsch, L. (2019). Adult learners' perceptions of self-directed learning and digital technology usage in continuing professional education: An update for the digital age. *Journal of Adult and Continuing Education, 25*(1). https://journals.sagepub.com/doi/pdf/10.1177/1477971419827318

Dahlberg, H., & Dahlberg, K. (2019). The question of meaning—A momentous issue for qualitative research. *International Journal of Qualitative Studies on Health and Well-Being, 14*(1), 1-7. https://doi.org/10.1080/17482631.2019.1598723

Dewey, J. (1938). *Experience & education*. http://www.schoolofeducators.com/wp-content/uploads/2011/12/EXPERIENCE-EDUCATION-JOHN-DEWEY.pdf

Dreyfus, H., & Dreyfus, S. (1986). Mind over machine: The power of human intuition and expertise in the era of the computer. *The Free Press*, *50*. http://www.alpheus.org/TS_Open/SkillAcquisitionTableText.pdf

duPlessis, V., Beshiri, R., Bollman, R. D., & Clemenson, C. (2001). Definitions of rural (Catalogue No. 21-006-XIE). *Rural and Small Town Canada: An Analysis Bulletin, 3*(3), 1–17. https://www150.statcan.gc.ca/n1/pub/21-006-x/21-006-x2001003-eng.pdf

Ebright, P. R. (2010). The complex work of RNs: Implications for healthy work environments. *The Online Journal of Issues in Nursing, 15*(1). https://ojin.nursingworld.org/MainMenuCategories/ANAMarketplace/ANAPeriodicals/OJIN/TableofContents/Vol152010/No1Jan2010/Complex-Work-of-RNs.html

Eraut, M. (2000). Non-formal learning and tacit knowledge in professional work. *British Journal of Education Psychology, 70*, 113-136. https://doi.org/10.1348/000709900158001

Eraut, M. (2004a). Sharing practice: Problems and possibilities. *Learning in Health & Social Care, 3*(4), 171-178. https://onlinelibrary.wiley.com/doi/10.1111/j.1473-6861.2004.00079.x

Eraut, M. (2004b). The practice of reflection. *Learning in Health & Social Care, 3*(2), 47-52. https://doi.org/10.1111/j.1473-6861.2004.00066.x

Executive Agency for Health Consumers. (2013). *Study concerning the review and mapping of continuous professional development and lifelong learning for health professionals in the European Union.* https://ec.europa.eu/health/publications/study-concerning-review-and-mapping-continuous-professional-development-and-lifelong-learning-health_en

Fahlman, D. (2012). *Informal learning of registered nurses using mobile devices in the hospital workplace* (Doctoral dissertation, Athabasca University). DTheses. http://hdl.handle.net/10791/21

Fenwick, T. J. (2001). Tides of change: New themes and questions in workplace learning. *New Directions for Adult and Continuing Education, 92*, 3-17. https://doi.org/10.1002/ace.36

Fenwick, T. J. (2002). New understandings of learning in work: Implications for education and training. *ResearchGate.* https://www.researchgate.net/publication/255669456_New_Understandings_of_Learning_in_Work_Implications_for_Education_and_Training

Fenwick, T. J. (2008). Workplace 'learning' and adult education: Messy objects, blurry maps and

making difference. *European Journal for Research on the Education and Learning of*

Adults, 1(1-2), 29-95.

https://www.researchgate.net/publication/49609100_Workplace_%27learning%27_and_a

dult_education_Messy_objects_blurry_maps_and_making_difference

Franchuk, L. (2021). *Wabasca nursing team paves way for innovative training solution during*

COVID-19. Rural Health Professions Action Plan. https://rhpap.ca/news-events/wabasca-

nursing-team-paves-way-for-innovative-training-solution-during-covid-19/

Fulton, S., Krainovich-Miller, B., & Cameron, C. (2013). Finding and appraising the literature.

In G. LoBiondo-Wood, J. Haber, C. Cameron, & M. D. Singh (Eds.), *Nursing research in*

Canada: Methods, critical appraisal, and utilization (3rd Canadian ed., pp. 90-111).

Elsevier.

Glesne, C. (2011). *Becoming qualitative researchers: An introduction* (4th ed.). Pearson.

Haraway, D. (1988). Situated knowledges: The science question in feminism and the privilege of

partial perspective. *Feminist Studies, 14*(3), 575-599.

http://www.jstor.org/stable/3178066

Hase, S., & Kenyon, C. (2000). From andragogy to heutagogy. *ultiBASE.*

https://www.researchgate.net/publication/301339522_From_andragogy_to_heutagogy

Hase, S., & Kenyon, C. (2007). Heutagogy: A child of complexity theory. *Complicity: An*

International Journal of Complexity and Education, 4(1), 111-118.

https://www.researchgate.net/publication/37357676_Heutagogy_A_Child_of_Complexit

y_Theory

Hunsberger, M., Baumann, A., & Blythe, J. (2009). Sustaining the rural workforce: Nursing

   perspectives on worklife challenges. *The Journal of Rural Health, 25*(1), 17-25.

   https://onlinelibrary.wiley.com/doi/10.1111/j.1748-0361.2009.00194.x

Jantzen, D. D. (2012). *Refining nursing practice: A grounded theory of how nurses learn to

   nurse well in the current health care milieu* (Doctoral dissertation, University of Alberta).

   Graduate Studies and Research, Faculty of Theses and Dissertations.

   https://era.library.ualberta.ca/items/08d6f0c7-0451-4e16-8659-6066d2d2a26e

Kittel, A., Kunz, R. A. C., & Seufert, T. (2021). Self-regulation in informal workplace learning:

   Influence of organizational learning culture and job characteristics. *Frontiers in

   Psychology, 12*, 1-17.

   https://www.frontiersin.org/articles/10.3389/fpsyg.2021.643748/full

Kleib, M., & Nagle, L. (2018). Factors associated with Canadian nurses' informatics

   competency. *CIN: Computers, Informatics, Nursing, 36*(8), 406-414.

   https://journals.lww.com/cinjournal/Abstract/2018/08000/Factors_Associated_With_Can
   adian_Nurses_.7.aspx

Knowles, M. S., Holton III, F. E., & Swanson, R. A. (2005). *The adult learner: The definitive

   classic in adult education and human resource development.* Elsevier.

   http://www.intrpr.info/library/books/knowles-the-adult-learner.pdf

Kohtz, C., Gowda, C., & Guede, P. (2017). Have you heard of cognitive stacking? *Nursing Made

   Incredibly Easy!*

   https://journals.lww.com/nursingmadeincrediblyeasy/Fulltext/2017/07000/Have_you_hea
   rd_of_cognitive_stacking_.2.aspx

Kolb, D. A. (1984). *Experiential learning: Experience as the source of learning and

   development*. Prentice-Hall.

https://www.researchgate.net/publication/235701029_Experiential_Learning_Experience
_As_The_Source_Of_Learning_And_Development

Kosteniuk, J., Stewart, N. J., Wilson, E. C., Penz, K. L., Martin-Misener, R., Morgan, D. G.,
Karunanayake, C., & MacLeod, M. L. P. (2019). Communication tools and sources of
education and information: A national survey of rural and remote nurses. *Journal of the
Medical Library Association, 107*(4), 538-554.
https://www.researchgate.net/publication/336204084_Communication_tools_and_source
s_of_education_and_information_A_national_survey_of_rural_and_remote_nurses

Krathwohl, D. R., & Smith, N. L. (2005). *How to prepare a dissertation proposal: Suggestions
for students in education & the social and behavioral sciences.* Syracuse University
Press.

Kulig, J. C., Kilpatrick, K., Moffitt, P., & Zimmer, L. (2015). Recruitment and retention in rural
nursing: It's still an issue! *Canadian Journal of Nursing Leadership, 28*(2), 40-50.
https://doi.org/10.12927/cjnl.2015.24353

LaRiviere, M. (2019). *Integral analysis of Alberta registered nurses' mandated professional
learning* [Unpublished doctoral thesis]. University of Calgary.
https://prism.ucalgary.ca/items/e7b87885-c61a-4139-a03f-58f8d0e38573

Levers, M-J, D. (2018). *Nursing practice change: An interpretive description study of nurses
working in Qatar* [Doctoral dissertation, University of Victoria]. UVicSpace.
https://dspace.library.uvic.ca/bitstream/handle/1828/11202/Levers_Merry-
Jo_PhD_2019.pdf?sequence=1&isAllowed=y

Lewin, K. (1951). *Field theory in social science: Selected theoretical papers.* Harper Brothers
Publishers.
https://ia802905.us.archive.org/4/items/in.ernet.dli.2015.138989/2015.138989.Field-

Theory-In-Social-Science-Selected-Theoretical-Oaoers.pdf

Lincoln, Y., & Guba, E. (1985). *Naturalistic inquiry*. Sage.

Lofland, J., & Lofland, L. H. (1995). *Analyzing social settings: A guide to qualitative observation and analysis* (3rd ed.). Wadsworth.

MacKinnon, K. (2010). Learning maternity: The experiences of rural nurses. *The Canadian Journal of Nursing Research, 42*(1), 38-55. https://www.researchgate.net/publication/43344377_Learning_maternity_Rural_nurses'_experiences

MacLeod, M. L. P. (1999). 'We're it': Issues and realities in rural nursing practice. In W. Ramp, J. Kulig, I. Townshend, & V. McGowan (Eds.), *Health in rural settings: Contexts for action* (pp. 165-178). University of Lethbridge.

MacLeod, M. L. P., Kulig, J., & Stewart, N. (2019). *Lessons from 20 years of research on nursing practice in rural and remote Canada.* University of Northern British Columbia. https://www2.unbc.ca/sites/default/files/sections/rural-nursing/en/lessonsfromtwentyyearsofresearchcna2019.pdf

MacLeod, M. L. P., & Place, J. (2015). Rural-focused nursing education: A summative evaluation of RNs' experiences of the rural nursing certificate program. *Quality Advancement in Nursing Education – Avancées en formation infirmière, 1*(2), 1-14. https://qane-afi.casn.ca/journal/vol1/iss2/3/

Macleod, M. L. P., Stewart, N. J., Wilson, J. G., Penz, K. L., Olynick, J., Karunanayake, C. P., Kilpatrick, K., Kulig, J. C., Martin-Misener, R., Koren, I., Zimmer, L. V., Van Pelt, L., & Garraway, L. (2019). Rural and remote registered nurses' perception of working beyond their legislated scope of practice. *Nursing Leadership*, *32*(1), 20-29. https://www.longwoods.com/content/25851/rural-and-remote-registered-nurses-

perception-of-working-beyond-their-legislated-scope-of-practice

Marshall, C., & Rossman, G. B. (2016). *Designing qualitive research* (6th ed.). Sage.

Marsick, V. J., & Watkins, K. E. (1990/2015). *Informal and incidental learning in the workplace.* Routledge.

Marsick, V. J., Watkins, K. E., Callahan, M. W., & Volpe, M. (2006). *Reviewing theory and research on informal and incidental learning* (pp. 794-800). https://files.eric.ed.gov/fulltext/ED492754.pdf

Martyn, J-A., Paliadelis, P., & Perry, C. (2019). The safe administration of medication: Nursing behaviours beyond the five-rights. *Nurse Education in Practice, 37*, 109-114. https://www.researchgate.net/publication/333243280_The_safe_administration_of_medication_Nursing_behaviours_beyond_the_five-rights

Maslow, A. (1943). A theory of human motivation. In Christopher D. Green (Ed.), *Classics in the history of psychology.* York University. https://www.semanticscholar.org/paper/A-Theory-of-Human-Motivation-Maslow/1b0d55734c66b713477a4d1ef358ca1399ca0e69

Mather, C., Cummings, E. A., & Gale, F. (2019). Nurses as stakeholders in the adoption of mobile technology in Australian health care environments: Interview study. *JMIR Nursing, 2*(1), e14279. https://nursing.jmir.org/2019/1/e14279/

Mather, C., Gale, F., & Cummings, E. A. (2017). Governing mobile technology use for continuing professional development in the Australian nursing profession. *BMC Nursing, 16,* 17. https://bmcnurs.biomedcentral.com/articles/10.1186/s12912-017-0212-8

McClenaghan, E. (2020). *Organizational change, work conditions and professional learning, a case study of nurses in Ontario* [Master's thesis, Western University]. Electronic Thesis and Dissertation Repository. https://ir.lib.uwo.ca/do/search/?q=author_lname%3A"McClenaghan"%20AND%20autho

r_fname%3A"Elise"&start=0&context=674312&sort=date_desc&facet=

McDonald, S. A. (2022). *An interpretive description of new graduate nurses' transition into professional practice* [Master's thesis, University of Calgary]. PRISM Repository. https://prism.ucalgary.ca/server/api/core/bitstreams/c618feae-64d3-47ef-b154-fb11d1e61748/content

Melrose, S. (2009). Naturalistic generalization. In A. J. Mills, G. Durepos, & E. Wiebe (Eds.), *Encyclopedia of case study research* (Vol. 2, pp. 599–600). Sage.

Merriam-Webster. (2022). Chaos. In *Merriam-Webster.com dictionary.* https://www.merriam-webster.com/dictionary/chaotic

Mezirow, J. (1990). *Fostering critical reflection in adulthood: A guide to transformative and emancipatory learning*. Jossey-Bass Publishers.

Mezirow, J. (1997). Transformative learning: Theory to practice. *New directions for adult and continuing education.* Josey-Bass. https://www.ecolas.eu/eng/wp-content/uploads/2015/10/Mezirow-Transformative-Learning.pdf

Mickan, S., Golenko, X., & Buys, N. (2019). Exploring future health workforce education needs: A qualitative investigation. *Journal of Multidisciplinary Healthcare, 12*, 527-532. https://doi.org/10.2147/JMDH.S211266

Moore, L. K. (2018). Improving evidence-based practice skills of practicing registered nurses. Doctor of nursing practice technical reports. Paper 4. *TopScholar: The Research & Creative Activity Database of WKU*. https://digitalcommons.wku.edu/dnp_tech_reports/4

Morse, J. M. (1994). "Emerging from the data": The cognitive process of analysis in qualitative inquiry. In J. M. Morse (Ed.), *Critical issues in qualitative research methods* (pp. 23-43). Sage.

Morse, J. M. (2008). Confusing categories and themes. *Qualitative Health Research, 18,* 727–

728. https://journals.sagepub.com/doi/pdf/10.1177/1049732308314930

Morse, J. M., Barrett, M., Mayan, M., Olson, K., & Spiers, J. (2002). Verification strategies for establishing reliability and validity in qualitative research. *International Journal of Qualitative Methods, 1*(2), 1–19. https://www.researchgate.net/publication/309051156_Verification_strategies_for_establishing_reliability_and_validity_in_qualitative_research

Nelson, S., & Purkis, M. E. (2004). Mandatory reflection: The Canadian reconstitution of the competent nurse. *Nursing Inquiry, 11*(4), 247-257. https://onlinelibrary.wiley.com/doi/abs/10.1111/j.1440-1800.2004.00233.x

Nurses and Nurse Practitioners of British Columbia. (2018). *Enhancing rural and remote nursing practice for a healthier B.C.* https://www.nnpbc.com/pdfs/policy-and-advocacy/rural-and-remote/Enhancing-Rural-&-Remote-Nursing-Practice-for-a-Healthier-BC.pdf

Nursing Times. (2023). *Exploring the use of pre-briefing and debriefing in educational settings.* EMAP Publishing Limited. https://www.nursingtimes.net/roles/nurse-educators/exploring-the-use-of-pre-briefing-and-debriefing-in-educational-settings-21-11-2022/

Oliver, P. (2014). *Writing your thesis.* Extract from Tomorrow's Professor #1301 "The characteristics of a good thesis". https://sk.sagepub.com/books/writing-your-thesis-third-edition

ONeill, K., Robb, M., Kennedy, R., Bhattacharya, A., Dominici, N., & Murphy, A. (2018). Mobile technology, just-in-time learning and gamification: Innovative strategies for a CAUTI education program. *Online Journal of Nursing Informatics (OJNI), 22*(2). https://www.himss.org/resources/mobile-technology-just-time-learning-and-gamification-

innovative-strategies-cauti

Organizing Engagement. (2022). *Models: Appreciative inquiry.*

https://www.organizingengagement.org/models/appreciative-inquiry/

Panel on Research Ethics. (2022). *The Tri-Council policy statement: Ethical conduct for research involving humans - TCPS2: CORE-2022 (Course on research ethics).*

https://www.tcps2core.ca/welcome

Parks, K., Moore, A., & Paris, D. (2020). Transitioning from expert nurse to novice educator. *Nursing Made Incredibly Easy!, 18*(3), 51-55.

https://journals.lww.com/nursingmadeincrediblyeasy/fulltext/2020/05000/transitioning_from_expert_nurse_to_novice_educator.10.aspx

Parse, R. (2006). Nursing science: The transformation of practice. In W. K. Cody (Ed.), *Philosophical and theoretical perspectives for advanced nursing practice* (pp. 65–72). Jones and Bartlett.

Paul, L. G. (1997). The right formula for training. *Datamation, 43*(9), 96-101.

https://www.proquest.com/docview/220226366/fulltextPDF/D44EACBB7E24D78PQ/50?accountid=8408

Peebles, R. C., Nicolson, I. K., Schlieff, J., Peat, A., & Brewster, D. J. (2020). Nurses' just-in-time training for clinical deterioration: Development, implementation and evaluation. *Nurse Education Today, 84*, 1-5. https://doi.org/10.1016/j.nedt.2019.104265

Reber, A. S. (1993). Implicit learning and tacit knowledge. *Journal of Experimental Psychology: General, 118*(3), 219-235.

http://www.bigfatgenius.com/532%20Summer%202008/Reber-Implicit_Learning_and_Tacit_Knowledge.pdf

Reed, J., Pearson, P., Douglas, B., Swinburne, S., & Wilding, H. (2002). Going home from

hospital -- An appreciative inquiry study. *Health & Social Care in the Community, 10*(1), 36-45. https://pubmed.ncbi.nlm.nih.gov/11882088/

Rees, S., Farley, H., & Moloney, C. (2021). How registered nurses balance limited resources in order to maintain competence: A grounded theory study. *BMC Nursing, 20*, 176-186. https://doi.org/10.1186/s12912-021-00672-6

Richards, L., & Morse, J. M. (2007). *Readme first for a user's guide to qualitative methods* (2nd ed.). Sage.

Riel, M. M. (2000). Education in the 21st century: Just-in-time learning or learning communities. In Emirates Center for Strategic Studies and Research (Ed.), *Education and the Arab world: Challenges of the next millennium* (pp. 137-160). Emirates Center for Strategic Studies and Research. https://www.researchgate.net/publication/258698171_Education_in_the_21st_Century_Just-in-time_Learning_or_Learning_Communities

Riley, K., & Schmidt, D. (2016). Does online learning click with rural nurses? A qualitative study. *The Australian Journal of Rural Health, 24*, 265-270. https://onlinelibrary.wiley.com/doi/10.1111/ajr.12263

Rivas, C. (2018). Finding themes in qualitative data. In C. Seale (Ed.), *Researching society and culture* (pp. 429-454). Sage.

RNspeak.com. (2022). *A nurse's guide to effectively using social media for professional development.* https://rnspeak.com/social-media-for-nurses/

Robertson-Malt, S., Gaddi, F., & Hamilton, A. (2020). Learning huddles – An innovative teaching method. *Nurse Education in Practice, 47*, 1-5. https://doi.org/10.1016/j.nepr.2020.102830

Rogers, C. R. (1969). *Freedom to learn: A view of what education might become.*

https://principlesoflearning.wordpress.com/dissertation/chapter-3-literature-review-2/the-human-perspective/freedom-to-learn-rogers-1969/

Rohatinsky, N., & Jahner, S. (2016). Supporting nurses' transition to rural healthcare environments through mentorship. *Rural and Remote Health, 16*(1). https://www.rrh.org.au/journal/article/3637/

Rosenhead, J. (1998). *Complexity theory and management practice.* http://gsbblogs.uct.ac.za/walterbaets/files/2009/09/rosenhead1.html

Sandelowski, M. (1998). Writing a good read: Strategies for re-presenting qualitative data. *Research in Nursing & Health, 21*, 375-382. https://onlinelibrary.wiley.com/doi/abs/10.1002/%28SICI%291098-240X%28199808%2921%3A4%3C375%3A%3AAID-NUR9%3E3.0.CO%3B2-C

Sandelowski, M., & Barroso, J. (2003). Classifying the findings in qualitative research. *Qualitative Health Research, 13*(7), 905-923. http://www.stes-apes.med.ulg.ac.be/Documents_electroniques/MET/MET-DON/ELE%20MET-DON%207118.pdf

Scharff, J. (2013). The distinctive nature and scope of rural nursing practice: Philosophical basis. In A. Winters (Ed.), *Rural nursing: Concepts, theory, and practice* (4th ed., pp. 247–258). Springer.

Schön, D. A. (1983). *The reflective practitioner: How professionals think in action*. Basic Books. https://sopper.dk/speciale/arkiv/book49.pdf

Schugurensky, D. (2000). *The forms of informal learning: Towards a conceptualization of the field: Wall working paper no. 19.* Centre for the Study of Education and Work: University of Toronto. https://tspace.library.utoronto.ca/bitstream/1807/2733/2/19formsofinformal.pdf

Sedgwick, M. (2008). *A focused ethnography of preceptorship in rural acute care hospitals* (Doctoral dissertation, University of Alberta). https://www.collectionscanada.gc.ca/obj/thesescanada/vol2/002/NR45597.PDF?oclc_number=687858387

Sedgwick, M., & Pijl-Zieber, E. (2015). New rural acute care nurses speak up: 'We're it' but we're not ready. *Journal for Nurses in Professional Development, 31*(5), 278-283. https://www.researchgate.net/publication/282043927_New_Rural_Acute_Care_Nurses_Speak_Up_we%27re_it_but_We%27re_Not_Ready

Serafini, M., Harris, J., & Bhatnagar, S. (2023). Rural routers: How digital technology can improve equity in health care. *The OECD Forum Network.* https://www.oecd-forum.org/posts/rural-routers-how-digital-technology-can-improve-equity-in-health-care

Siemens, G. (2004). Connectivism: A learning theory for the digital age. (Web log message). *Elearnspace*. https://www.academia.edu/2857237/Connectivism_a_learning_theory_for_the_digital_age

Smith, J. C. (2014). *A double whammy! New baccalaureate nurse graduates' transition into rural acute care* (Master's thesis, Athabasca University). DTheses. http://hdl.handle.net/10791/50

Smith, J. C., & Vandall-Walker, V. (2017). A double whammy! New baccalaureate registered nurses' transitions into rural acute care. *Rural and Remote Health, 17*(4), 1-14. https://doi.org/10.22605/RRH4256

Smith, S. D., Thompson, C. E., & Sims, S. (2020). Adapting a nurse-managed mobile simulation program to meet rural health nursing continuing education needs. *The Journal of Continuing Education in Nursing, 51*(2), 32-86.

https://www.proquest.com/docview/2344261634/fulltextPDF/E2B859BD37240B6PQ/7?accountid=8408

Snowden, D. J., & Boone, M. E. (2007). A leader's framework for decision making. *Harvard Business Review*, *85*(11), 68. https://www.systemswisdom.com/sites/default/files/Snowden-and-Boone-A-Leader's-Framework-for-Decision-Making_0.pdf

Statistics Canada. (2023). *Population and dwelling counts by the statistical area classification.* https://www150.statcan.gc.ca/t1/tbl1/en/tv.action?pid=9810001601

Stephenson, J. (1992). Capability and quality in higher education. In J. Stephenson & S. Weil (Eds.), *Quality in learning* (pp. 1-6). Kogan Page. https://books.google.ca/books/about/Capability_and_Quality_in_Higher_Educati.html?id=jPiwJLiWtA8C&redir_esc=y

Strauss, A., & Corbin, J. (1998). *Basics of qualitative research* (2nd ed.). Sage.

Streumer, J. N., & Kho, M. (2006). The world of work-related learning. In J. N. Streumer (Ed.), *Work-related learning* (pp. 3-49). Springer. https://link.springer.com/chapter/10.1007/1-4020-3939-5_1

Swanson, R. A., & Holton III, E. F. (2009). *Foundations of human resource development* (1st ed.). Berrett-Koehler. https://www.google.ca/books/edition/Foundations_of_Human_Resource_Developmen/9jnlo2ZAnOEC?hl=en&gbpv=1&dq=Foundations+of+Human+Resource+Development+1st+edition&printsec=frontcover

Thorne, S. (2008). *Interpretive description*. Left Coast Press.

Thorne, S. (2016). *Interpretive description* (2nd ed.). Routledge: Taylor & Francis Group.

Thorne, S., Reimer Kirkham, S., & MacDonald-Emes, J. (1997). Interpretive description: A noncategorical qualitative alternative for developing nursing knowledge. *Research in Nursing & Health, 20*, 169–177. https://onlinelibrary.wiley.com/doi/epdf/10.1002/%28SICI%291098-240X%28199704%2920%3A2%3C169%3A%3AAID-NUR9%3E3.0.CO%3B2-I

Thorne, S., Reimer Kirkham, S., & O'Flynn-Magee, K. (2004). The analytic challenge in interpretive description. *International Journal of Qualitative Methods, 3*(2). https://sites.ualberta.ca/~iiqm/backissues/3_1/pdf/thorneetal.pdf

Tomblin Murphy, G., Sampalli, T., Bourque Bearskin, L., Cashen, N., Cummings, G., Elliott Rose, A., Etowa, J., & Grinspun, D. (2022). Investing in Canada's nursing workforce post-pandemic: A call to action. *Facets, 7*(1). https://www.facetsjournal.com/doi/10.1139/facets-2022-0002#sec-4

Trajkovski, S., Schmied, V., Vickers, M., & Jackson, D. (2013). Implementing the 4D cycle of appreciative inquiry in health care: A methodological review. *Journal of Advanced Nursing, 69*(6), 1224-1234. https://doi.org/10.1111/jan.12086

Twigg, D. E., Cramer, J. H., & Pugh, J. D. (2016). Nurse staffing and workload drivers in small rural hospitals: An imperative for evidence. *Research Online.* https://ro.ecu.edu.au/cgi/viewcontent.cgi?article=3523&context=ecuworkspost2013

University of Calgary. (2023). *Faculty of nursing: Rural and remote nursing.* https://nursing.ucalgary.ca/current-students/graduate/graduate-certificates/rural-and-remote-nursing

Utunen, H., Van Kerkhove, M. D., Tokar, A., O'Connell, G., Gamhewage, G. M., & Socé Fall, I. (2021). One year of pandemic learning response: Benefits of massive online delivery of the World Health Organization's technical guidance. *JMIR Public Health and*

Surveillance, 7(4), 1-6. https://publichealth.jmir.org/2021/4/e28945

Vygotsky, L. S. (1978). *Mind in society: The development of higher psychological processes.* Harvard University Press.
https://www.google.ca/books/edition/Mind_in_Society/Irq913lEZ1QC?hl=en&gbpv=1&dq=Vygotsky,+L.+S.+(1978).+Mind+in+society:+The+development+of+higher+psychological+processes.&printsec=frontcover

Watkins, K. E., & Marsick, V. J. (2021). Informal and incidental learning in the time of COVID-19. *Advances in Developing Human Resources, 23*(1), 88-96.
https://doi.org/10.1177/1523422320973656

Wilding, C., & Whiteford, G. (2005). Phenomenological research: An exploration of conceptual, theoretical, and practical issues. *Occupation Participation and Health, 25*(3), 98–104.
https://tuxdoc.com/download/wilding-c-amp-white-ford-g-2005-phenomenological-research-an-exploration-of-conc_pdf

Witherspoon, A. (2019, May 11). Just in time education. *Education.*
https://alisonwitherspoon.com/just-in-time-education/

Wolcott, H. E. (1994). *Transforming qualitative data: Description, analysis, and interpretation.* Sage.
https://books.google.ca/books?hl=en&lr=&id=BMqxX_TaWNEC&oi=fnd&pg=PA1&dq=Wolcott,+1994&ots=1Dr_lPBMtz&sig=YzDQIJZegwdahOHez_7gSKRv6vQ#v=onepage&q=Wolcott%2C%201994&f=false

World Health Organization. (2022). *Coronavirus disease (COVID-19) pandemic*.
https://www.who.int/emergencies/diseases/novel-coronavirus-2019

Yoderwise, P. S. (2020). Editorial: In-real-time learning. *The Journal of Continuing Education in Nursing, 51*(5), 199. https://www.researchgate.net/publication/341081595_In-Real-Time_Learning

Zhu, X., Merchant, K. A. S., Mohr, N. M., Wittrock, A. J., Bell, A. L., & Ward, M. M. (2021). Real-time learning through telemedicine enhances professional training in rural emergency departments. *Telemedicine and e-Health, 27*(4), 441-447. https://www.liebertpub.com/doi/abs/10.1089/tmj.2020.0042

Appendix A: Continuing Education for Rural Registered Nurses in Central Alberta

Courses offered by Alberta Health Services Central Zone are as follows:
1. Lead II Interpretation
2. Cardiac Arrest Management Basic (CAM B)
3. Cardiac Arrest Management Advanced (CAM A)
4. Obstetrical orientation days – 2-3 days postpartum; 4 days Labor and Delivery Room – theory days – include Fetal Heart Surveillance.
5. Obstetrics in the Emergency Department (preterm labour, trauma in pregnancy, hypertensive crisis in pregnancy, perinatal loss, imminent birth in the absence of a physician/midwife)
6. Medical Management – the Big 4 topics (diabetes, hepatic, renal, and sepsis)
7. Complex care in the rural setting – mental health, harm reduction, toxicology, domestic violence
8. Charge nurse workshop
9. Pediatric building blocks (asthma, bronchiolitis, seizure, gastroenteritis)
10. Pediatrics advanced care – like Pediatric Advanced Life Support (PALS) – a quick run through of scenarios – bradycardia, supraventricular tachycardia, ventricular tachycardia, diabetic ketoacidosis, and trauma and procedural sedation
11. Rural Respiratory day
12. Trauma 101 (like a mini–Trauma Nursing Core Course)
13. Canadian Triaging Acuity Scale (CTAS)
14. Intravenous Direct
15. Undergraduate Nurse Employee orientation
16. Emergency Room orientation (usually delivered by site)
17. Acute Care Orientation (by site)

Educators who teach about geriatric care and those who teach about acute care patients jointly teach the following:
18. Wound care fundamentals
19. Palliative care 101
20. Degenerative central nervous system diseases
21. Mental illness in a non psychiatric setting
22. Peripheral intravenous education day
23. Central Vascular Access Device (CVAD)/Central Venous Catheter (CVC) day workshop
24. Rural Acute Care of the Elderly (RACE)

For a price, staff can also participate in the following certificate-based education:
1. Neonatal Resuscitation Provider (NRP)
2. Advanced Cardiac Life Support (ACLS)
3. Trauma Nursing Core Course (TNCC)
4. Pediatric Advanced Life Support (PALS)

(N. Schmaltz, personal email communication, April 19, 2021).

Appendix B: Data Charted from Literature Review Articles

Blended Resources Can Support Rural RNs' Just-In-Time Learning Activities				
	Study and Location	**Control Group**	**Sample (S)**	**Phenomenon of Interest (PI)** **Design (D)** **Research Type (R)**	**Evaluation (E)** 1. **What was being learned?** 2. **How was it being learned?** 3. **What was the overall effect? Challenges, Barriers, Self-efficacy, capability, reflection**
Type of Blended Educational Resource Matters				
1	Baylak et al. (2020) British Columbia, Canada	No	Discussion Paper	Emerging Telehealth technology, Clinical Outreach and Diagnosis Intervention (CODI) pilot project, for supporting rural physician and RN just-in-time learning	1. Trauma Care via expert physicians 2. Telehealth 3. Improved patient outcomes/supported nursing care Barriers – cost, inadequate Internet Infrastructure
2	Bell (2020), United States	No	Discussion Paper	Just-in-time learning during a crisis Discussion paper	1. Managing new procedures or areas of work during the COVID-19 pandemic 2. Online resource 3. Expectation that RNs would use self-reflection and self-efficacy to self-determine their capabilities and learning needs
3	Bradley et al. (2020) United States	No	None – Editorial Discussion Paper	JUST-IN-TIME learning and QR codes that are linked to tip sheets or 1–2-minute videos	1. How to use new equipment; COVID-19 information from the Centers for Disease Control and Prevention 2. QR codes 3. Can result in greater efficiency and improve staff and patient safety; challenge – whether managers were

					willing to accept as an acceptable educational tool at the bedside
4	Burman et al. (2021) Wyoming, United States	No	Extension for Community Healthcare Outcomes (ECHO) n = 1084 RN, coordinators, program managers, educators, etc. attendees participated	ECHO: A model for professional development (using videoconferencing) in nursing through learning networks Quantitative - surveys 2017 – 2020 in 39 student health sessions Outcomes: 90% satisfaction rate, 82.5% implemented learning in practice Feb-May 2020 – 8 sessions n=266 (average of 33.3 attendees per session) – nurse practitioners and RNs Outcomes: 95% satisfaction rate, 69% planned to implement learning in to practice, 92% joined a professional network Quantitative - surveys	1. Evidence-based procedures and information 2. Technology; Didactic training on core professional development topics; case presentations; outcome measurement – all of which contribute to a multilevel learning loop that enables learners to learn by doing, from each other, and from specialists 3. Barriers – competing demands of patient care (length of sessions) and lack of support from clinic leadership; Facilitators – expertise of the team, collegial environment, value of a community of providers
5	Curran et al. (2019) Newfoundland and Labrador, Canada	No	Purposive sample n=55 that included 9 physicians, 20 nurses, 4 pharmacists, 22 social workers	Adult learners' perceptions of self-directed learning and digital technology usage in continuing professional education Mixed Methods Case Study – semi-structured interviews; web-based questionnaire	1. Continuing professional education at point of care 2. Self-directed learning using digital technology at point of care – mobile phones triggered by individual initiative. 3. Participants used self-reflection and self-efficacy to determine their learning needs Facilitators included good Internet service and

					an organizational culture that supported learning using digital technology. Barriers included poor Internet services and technical issues, too much information to navigate, and an organizational culture that did not support use of mobile technologies.
6	Franchuk (2021), Alberta, Canada	No	Discussion Paper	Innovative training solution during COVID-19	1. Continuing education resources about COVID-19 2. Low-fidelity simulation over using a phone 3. Facilitated ability to capably and safely provide care to patients experiencing COVID-19 symptoms
7	Kosteniuk et al. (2019), Canada	No	n=3822 (response rate of 40%) Subsample of 2827 mix of RNs and LPNs	Communication tools and sources of education and information: A national survey of rural and remote RNs and LPNs Quantitative survey	1. Continuing education resources 2. Communication tools that included the Internet, online and hardcopy policies, procedures, and protocols, human resources such as other on-site healthcare providers and those accessed online 3. Access to continuing education and up-to-date information is important for effective patient care
8	Martyn et al. (2019), Tasmania, Australia	No	n=20 novice to expert RNs at a regional rural	The safe administration of medication: Nursing behaviours beyond the five-rights	1. Information to safely administering medications 2. Online and in-

			hospital	Qualitative – appreciative inquiry design using observation	person educational resources
					3. Nurses went beyond provided medication administration framework using self-efficacy, self-determined learning (accessing a range of human supports), and reflection to safely administer medications
9	Rees et al. (2021), Queensland, Victoria, South Australia, the Northern Territory, Australia	No	n=27 RNs from a range of locations including metropolitan (9), regional (13), rural (3), and remote (2)	How RNs balance limited resources in order to maintain competence Qualitative – grounded theory using interviews	1. Theory of Economising Learning explains the continuous process by which nurses' access and undertake learning; includes defining a personal curriculum, gaining awareness of knowledge deficits, identifying learning opportunities, balancing opportunity with resource cost, engaging with learning 2. Digital resources 3. Facilitators – learning without the need to travel, nurse can choose relevant learning Barriers – lack of time, cost, amount of needed learning
10	Riley and Schmidt (2016), Australia	No	n=14 (n=3 health service managers, n=1 nurse unit manager, n=3 clinical nurse specialists, n=2 registered nurses, n=2 enrolled	Does online learning click with rural nurses? Qualitative – appreciative inquiry design using semi-structured interviewing	1. Continuing professional education 2. Online learning 3. Facilitators – Access to online resources, flexibility, and reduced cost Barriers – Lack of time, lack of organizational supports for transferring

			nurses, n=3 assistants in nursing)		knowledge to practice
11	Smith et al. (2020), North Carolina, United States	No	Discussion paper	Adapting a nurse-managed mobile simulation program to meet rural health nursing continuing education needs	1. Continuing professional education 2. High-fidelity simulation via a mobile laboratory truck 3. Facilitated access to just-in-time education
12	Utunen et al. (2021), Geneva, Switzerland	No	Discussion paper	One year of pandemic learning response: Benefits of massive online delivery of the World Health Organization's technical guidance	1. One year of pandemic learning response 2. Discussion paper 3. Benefits: equity, accessibility, flexibility, learner-centricity, quality
13	Zhu et al. (2021), Midwest states, United States	No	18 rural hospitals in 6 Midwest states n=7 physicians, 10 advanced practice providers, 11 nurses	Real-time learning through telemedicine enhances professional training in rural emergency departments Qualitative – using interviews	1. Variety of formal and informal training 2. Asynchronous and synchronous sessions – real-time training 3. Real-time training supported practitioners with staying current, increased their confidence, and improved practice performance
Organizational Support Matters					
1	Baylak et al. (2020) British Columbia, Canada	No	Discussion Paper	Emerging Telehealth technology, Clinical Outreach and Diagnosis Intervention (CODI) pilot project, for supporting rural physician and RN just-in-time learning	1. Trauma Care via expert physicians 2. Telehealth 3. Improved patient outcomes/supported nursing care Barriers – cost, inadequate Internet Infrastructure
2	Burman et al. (2021), Wyoming, United States	No	Extension for Community Healthcare Outcomes (ECHO) n = 1084	ECHO: A model for professional development (using videoconferencing) in nursing through learning networks Quantitative - surveys 2017 – 2020 in 39 student health sessions	1. Evidence-based procedures and information 2. Technology; Didactic training on core professional development topics; case

| | | | RN, coordinators, program managers, educators, etc. attendees participated | Outcomes: 90% satisfaction rate, 82.5% implemented learning in practice

Feb-May 2020 – 8 sessions
n = 266 (average of 33.3 attendees per session) – nurse practitioners and RNs
Outcomes: 95% satisfaction rate, 69% planned to implement learning in to practice, 92% joined a professional network | presentations; outcome measurement – all of which contribute to a multilevel learning loop that enables learners to learn by doing, from each other, and from specialists
3. Barriers – competing demands of patient care (length of sessions) and lack of support from clinic leadership; Facilitators – expertise of the team, collegial environment, value of a community of providers |
| 3 | Curran et al. (2019), Newfoundland and Labrador, Canada | No | Purposive sample n=55 that included 9 physicians, 20 nurses, 4 pharmacists, 22 social workers | Adult learners' perceptions of self-directed learning and digital technology usage in continuing professional education

Mixed Methods Case Study
– semi-structured interviews; web-based questionnaire | 1. Continuing professional education at point of care
2. Self-directed learning using digital technology at point of care – mobile phones triggered by individual initiative.
3. Participants used self-reflection and self-efficacy to determine their learning needs Facilitators included good Internet service and an organizational culture that supported learning using digital technology. Barriers included poor Internet services and technical issues, too much information to navigate, and an organizational culture that did not |

					support use of mobile technologies.
4	Franchuk (2021), Alberta, Canada	No	Discussion Paper	Innovative training solution during COVID-19	1. Continuing education resources about COVID-19 2. Low-fidelity simulation over using a phone 3. Facilitated ability to capably and safely provide care to patients experiencing COVID-19 symptoms
5	Kleib and Nagle (2018), Alberta, Canada	No	n=591 of RNs and registered psychiatric nurses from across Alberta	Factors associated with Canadian nurses' informatics competency Quantitative – exploratory, descriptive, cross-sectional survey	1. Health informatics 2. Competency in using technology in the clinical setting 3. Facilitators/Barriers – amount of education and support provided by employers
6	Kosteniuk et al. (2019), Canada	No	n=3822 (response rate of 40%) Subsample of 2827 mix of RNs and LPNs	Communication tools and sources of education and information: A national survey of rural and remote RNs and LPNs Quantitative survey	1. Continuing education resources 2. Communication tools that included the Internet, online and hardcopy policies, procedures, and protocols, human resources such as other on-site healthcare providers and those accessed online 3. Access to continuing education and up-to-date information is important for effective patient care
7	Mather et al. (2019), Tasmania, Australia	No	n=6 senior RNs holding executive positions	Advancing mobile learning in Australian healthcare environments: Nursing profession organisation perspectives and leadership challenges Qualitative interpretive description: Semi-structured interviews	1. Four key themes: risk management, perceived use of mobile technology, connectivity to information, real-time access 2. Mobile learning 3. Lack of leadership

					providing direction for the professional conduct of nurses, expressed as the inability of nurses to implement and model digital professionalism at point of care
8	McClenaghan (2020), Ontario, Canada	No	n=1326 (1% of 115385 across the province)	Organizational change, work conditions, professional learning Case study – survey - quantitative regression analysis	1. Continuing professional education 2. Formal and informal learning 3. Workplace conditions of experiencing discrimination, participating in policy-related decision-making, managing increased workloads, and deciding one's own working hours contributed to participants' engagement in informal learning
9	Mickan et al. (2019), Queensland, Australia	No	Convenience sample of n=12 senior academic or clinical staff from a breadth of health professions	Exploring future health workforce education needs Qualitative – exploratory with interviews	1. Future health workforce education needs 2. Senior academic staff 3. Recommendations: Learning should be aligned with clinical practice, interprofessional in nature, incremental and connected (i.e. microlearning), and academically recognized.
10	Rees et al. (2021), Queensland, Victoria, South Australia, the Northern Territory, Australia	No	n = 27 RNs from a range of locations including metropolitan (9), regional (13), rural (3), and remote (2)	How RNs balance limited resources in order to maintain competence Qualitative – grounded theory	1. Theory of Economising Learning explains the continuous process by which nurses' access and undertake learning; includes defining a personal curriculum, gaining awareness of

					knowledge deficits, identifying learning opportunities, balancing opportunity with resource cost, engaging with learning 2. Digital resources 3. Facilitators – f learning without the need to travel, nurse can choose relevant learning Barriers – lack of time, cost, amount of needed learning
11	Riley and Schmidt (2016), Australia	No	n=14 (n=3 health service managers, n=1 nurse unit manager, n=3 clinical nurse specialists, n=2 registered nurses, n=2 enrolled nurses, n=3 assistants in nursing)	Does online learning click with rural nurses? Qualitative – appreciative inquiry design using semi-structured interviewing	1. Continuing professional education 2. Online learning 3. Facilitators – Access to online resources, flexibility, and reduced cost Barriers – Lack of time, lack of organizational supports for transferring knowledge to practice
12	Rohatinsky and Jahner (2016), Saskatchewan, Canada	No	n=7 mix of RNs and LPNs in a rural hospital	Supporting nurses' transition to rural healthcare environments through mentorship Qualitative using semi-structured interviews	1. Nurses' transition to rural 2. Mentorship by senior staff nurses 3. Mentorship promoted trust, which then supported new nurses to seek advice for in-the-moment learning
13	Smith et al. (2020), North Carolina, United States	No	Discussion paper	Adapting a nurse-managed mobile simulation program to meet rural health nursing continuing education needs	1. Continuing professional education 2. High-fidelity simulation via a mobile laboratory truck 3. Facilitated access to just-in-time education

Appendix C: Athabasca University Certificate of Ethics Approval

Athabasca University
RESEARCH CENTRE

CERTIFICATION OF ETHICAL APPROVAL

The Athabasca University Research Ethics Board (REB) has reviewed and approved the research project noted below. The REB is constituted and operates in accordance with the current version of the Tri-Council Policy Statement: Ethical Conduct for Research Involving Humans (TCPS2) and Athabasca University Policy and Procedures.

Ethics File No.: **24862**

Principal Investigator:
Mrs. Jean Smith, Doctoral Student
Faculty of Humanities & Social Sciences\Doctor of Education (EdD) in Distance Education

Supervisor/Project Team:
Dr. Debra Hoven (Supervisor)

Project Title:
Just-In-Time Learning Activities of Registered Nurses Using Blended Resources in the Rural Hospital Workplace

Effective Date: July 20, 2022   **Expiry Date**: July 19, 2023

Restrictions:

Any modification/amendment to the approved research must be submitted to the AUREB for approval prior to proceeding.

Any adverse event or incidental findings must be reported to the AUREB as soon as possible, for review.

Ethical approval is valid *for a period of one year*. An annual request for renewal must be submitted and approved by the above expiry date if a project is ongoing beyond one year.

An Ethics Final Report must be submitted when the research is complete *(i.e. all participant contact and data collection is concluded, no follow-up with participants is anticipated and findings have been made available/provided to participants (if applicable))* or the research is terminated.

Approved by: **Date: July 20, 2022**

Tobias Wiggins, Chair
Faculty of Humanities & Social Sciences, Departmental Ethics Review Committee

_____

Appendix D: Red Deer Polytechnic Certificate of Ethics Approval

Red Deer Polytechnic

ADMINISTRATIVE REVIEW FOR ETHICAL ACCEPTABILITY

Project Title	Just-In-Time Learning Activities of Registered Nurses Using Blended Resources in the Rural Hospital Workplace
Principal Researcher	Jean Smith
Board of Record	Athabasca University
RDP Review Date	July 22, 2022
Application Number	2022-23-5

The Red Deer Polytechnic Research Ethics Board, having examined the application for the project named above, considering the procedures, as outlined by the applicant, acknowledges that this project meets the requirements of RDP's *Research Involving Humans* policy.

As this project has been reviewed and approved by Athabasca University, they will serve as the Board of Record for this project. Any revisions, reports of adverse events, and project status reports must be reported only to the Board of Record.

The RDP REB does not require any further documentation or reports in relation to this project. The RDP REB is available for consultation, however, should you encounter any issues that may impact on the safe and ethical continuation of this project.

I wish you all the best in this endeavor.

Krista Robson, PhD
Chair, Research Ethics Board
ethics@rdpolytech.ca

Appendix E: E-Letter to College of Registered Nurses of Alberta

Dear [Name]:

I am an Athabasca University student who is undertaking a research study in partial fulfillment of my Doctor of Distance Education degree. I am requesting your assistance with distributing information letters by email to prospective participants for my study titled: "Just-in-time Learning Activities of Registered Nurses Using Blended Resources in the Rural Hospital Workplace". I received approval for this study from Athabasca University's Research Ethics Board and Red Deer Polytechnic's Research Ethics Board. Please find attached approval letters from Athabasca University's Research Ethics Board and Red Deer Polytechnic's Research Ethics Board.

I am asking that you distribute via email the attached information letter to all rural registered nurses across the province of Alberta. Individuals eligible to participate in this study are registered nurses inclusive of genders and cultures who have been employed in one or more Alberta rural acute care hospitals (on a full-time, part-time, or casual basis) greater than one month. The overall purpose of this study is to examine the extent to which registered nurses perceive that blended resources in the rural hospital workplace support their just-in-time learning activities.

I will conduct a maximum of two interviews per participant. Initial interviews will be either in-person face-to-face, by telephone, or online via Microsoft Teams and approximately one hour in length. Some subsequent re-interviews may be needed and will be either in-person face-to-face, by telephone, or online via Microsoft Teams and approximately one hour in length. All interviews will be on dates and at times mutually agreeable between participants and me. To ensure privacy and confidentiality for in-person interviews, I will suggest meeting in places other than a participant's place of work. To ensure privacy and confidentiality for virtual and telephone interviews, I will recommend using a device not associated with a participant's place of work. Each initial interview will begin with a discussion of the study and an opportunity for participants to ask me any questions about the study. Participant consent will be obtained in one of two ways: Participants will have previously consented to participate in the study by emailing me their signed consent forms, of which I will have signed and provided them an e-copy, or participants will meet with me in-person prior to signing the consent form. In the latter scenario, I will ensure to review the letter of information with them and answer any questions they may have prior to asking them to sign two consent forms. I will then provide them one copy of the consent form and I will keep the other.

Demographic information will be collected and will include questions about participants' age, marital status, ethnic/cultural background, duration of employment in the rural hospital workplace, duration of employment as a rural registered nurse, previous work experience, and any additional details that participants may wish to include. Open ended questions will then be asked to encourage each participant to share their story about how blended resources support their just-in-time learning activities in the rural hospital workplace. During the follow-up interview, the initial findings will be discussed with each participant providing opportunity for them to ask questions related to the findings. Interviews will be audio-recorded or video-recorded (with their permission), kept private, confidential, and secure, and used for analysis purposes only. Once I have transcribed each interview, I will send it to the participant asking

them to confirm its accuracy and to provide them with an opportunity to make edits or additions to the information they provided.

In this study, no identifying information will be linked to individual responses. Each participant will choose a pseudonym. Transcripts and interview notes will be assigned a numerical code. The informed consents and demographic information will be kept separate from the transcripts. All written data will be kept in a locked cupboard and all electronic data will be password protected. After five years, all paper data will be destroyed by shredding and all audio, video, and computer data will be destroyed by complete deletion. The nurse managers where participants are employed will not be informed of the participation or non-participation of their employees in the evaluation portion of the study. Individual responses will be reported as aggregate data, quotes, and in descriptive form with no disclosure of participants' identities.

Participation in this study is voluntary and the risks to participating are minimal. If participants become anxious or overwhelmed, they will be directed to contact their employers' Employee Assistance Program. Participants will also be informed that if they do consent to participate, they will have not waived any rights to legal recourse in the event of research-related harm.

Participants will each be given a $10 Tim Horton's gift card. In addition, if they want, they can put their name into a draw for a $100 gasoline voucher. At the end of the study, I will draw a name and the winner will be sent the voucher and information by registered mail.

Findings of this study can be used to inform policy, educational, and organizational initiatives that will support improving future rural continuing education initiatives and registered nurses' practices. Participation in this study will not incur any expenses to participants beyond the time spent for interview(s).

Thank you for your attention in this matter. If you require further information, please feel free to contact either me, Jean Smith (principal researcher) by email at jsmith39@athabasca.edu or by telephone at (403) 845-0423 or Dr. Debra Hoven (my dissertation supervisor) at debrah@athabascau.ca or 1-866-441-5517.

Sincerely,

Principal Researcher   **Supervisor:**
Jean C. Smith, RN, MN   Dr. Debra Hoven
Doctor of Distance Education Student   Professor
Athabasca University   Athabasca University
jsmith39@athabasca.edu   debrah@athabascau.ca
403-845-0423   1-866-441-5517

Appendix F: Letter of Information / Informed Consent

Just-In-Time Learning Activities of Registered Nurses Using Blended Resources
in the Rural Hospital Workplace

February 13, 2022

Principal Researcher:	**Supervisor:**
Jean C. Smith, RN, MN	Dr. Debra Hoven
jsmith39@athabasca.edu	debrah@athabascau.ca
(403) 845-0423]	1-866-441-5517

I am inviting you to participate in my research study titled "Just-In-Time Learning Activities of Registered Nurses Using Blended Resources in the Rural Hospital Workplace". This study is partially funded by an education grant from Red Deer Polytechnic.

This form is part of the informed consent process and includes information to give you a basic idea of what this research is about and what your participation will involve, should you choose to participate. Your right to withdraw from the project is also described. You should understand the risks and benefits of the study so that you can make an informed decision about whether you wish to participate. Take the time to read this document carefully as it is important for you to understand the information included prior to consenting to participate.

It is entirely up to you whether or not you take part in this research. If you choose not to take part, or if you decide to withdraw from the research once it has started, there will be no negative consequences to yourself or your employment now, or in the future.

Introduction
My name is Jean Smith, and I am a Doctoral Candidate at Athabasca University. As a requirement for completing my degree, I am conducting a research project about the just-in-time learning activities of registered nurses in the rural hospital workplace. I am conducting this project under the supervision of Dr. Debra Hoven.

Why are you being asked to take part in this research project?
You are being invited to participate in this project because you have identified that you work in the rural acute care hospital workplace, are a registered nurse, live in the province of Alberta, and have indicated to the College of Registered Nurses of Alberta (CRNA) that you wish to participate in research projects.

What is the purpose of this research project?
My intent in this study is to provide valuable information to rural hospital administrators, educators, managers, nurses, and policymakers about factors that can support the just-in-time learning activities of registered nurses using blended resources in the rural hospital workplace. It is important that rural registered nurses share their practice experiences to help identify supports that have helped them. Only those who have experienced these challenges can truly understand them. The findings can assist in promoting effective changes to rural educational initiatives and policies, which in turn can support rural registered nurses to practice capably and safely.

What will you be asked to do?
If you choose to participate in this study, I would like to arrange for an interview to learn more about your experiences. We can do the interview in one of three ways: virtually through Microsoft Teams for which you will need access to a computer and a webcam, by telephone, or in a face-to-face meeting in a location mutually agreeable to the two of us. Interviews will last approximately one hour. For virtual interviews, I will video-record the interview. For telephone and face-to-face interviews, I will audio-record the interview. I may ask you to participate in a second interview to clarify or add depth to the findings. If I do, I will arrange to meet with you as outlined above.

I will begin the interview by asking you to choose a pseudonym followed by asking you questions about your age, marital status, ethnic/cultural background, duration of employment in the rural hospital workplace, duration of employment as a rural registered nurse, previous work experience, and any additional details that you may wish to include. I will then ask you to share your story about how blended resources support your just-in-time learning activities in the rural hospital workplace. Just-in-time learning activities is a term that refers to the thinking and actions of you or group of people when engaging in learning quickly and in-the-moment. Blended resources include the human or tangible learning resources that you access online, by telephone, or in-person. During a follow-up interview (if you agree to one) the initial findings will be discussed with you, and I will provide you with an opportunity to ask questions related to the findings. Once I have transcribed your interview data, I will send you an email copy to confirm its accuracy and to provide you with an opportunity to suggest edits or additions to the information you provided.

What are the risks and benefits of participating?
Participating in this study will be of minimal risk to you. If you do consent to participate, you have not waived any rights to legal recourse in the event of research-related harm. There is a chance you may feel uncomfortable sharing some of your thoughts and feelings. You do not have to answer questions if you do not want to. If you become upset, there will be someone you can speak to in your employer's Employee Assistance Program. Any information that has been written down or recorded will not be used unless you give your permission. Any information can immediately be deleted.

Participation in this study will not result in any expenses to you beyond the time spent for the interview(s). I can arrange to meet with you via Microsoft Teams, via telephone, or face-to-face. We will find a date, time, and place that are mutually agreeable between the two of us.

For your participation, I will give you a $10 Tim Horton's gift card that I will mail to you. In addition, if you want, you can put your name into a draw for a $100 gasoline voucher. At the end of the study, I will draw a name and the winner will be sent the voucher and information by registered mail. Another benefit to participating in this study is that knowledge will be gathered that can benefit your work environment, as the findings may be used to inform policy, educational, and organizational initiatives that will support improving continuing education initiatives and practices in the rural hospital workplace. However, it is possible that you will learn things about your own just-in-time learning activities, which you will want to use in practice long before the findings are revealed as knowledge situated in the rural hospital workplace.

266

Do you have to take part in this project?

As stated earlier in this letter, involvement in this project is entirely voluntary. You can participate, or say no, or leave the research study up until the point when I begin analyzing the data you have provided. Even if you withdraw, I will still provide you with a $10 Tim Horton's gift card to thank you for your time.

How will your privacy and confidentiality be protected?

The ethical duty of confidentiality includes safeguarding participants' identities, personal information, and data from unauthorized access, use or disclosure. If you choose to participate in an in-person interview and to protect your privacy and confidentiality, I suggest meeting in places other than your place of work. If you choose to participate in a virtual interview, I recommend using a device not associated with your place of work and I will use the anonymized mode of my private Microsoft Office 365 Teams application to conduct the interview. My dissertation supervisor and I will be the only people who will have access to your data, and we will keep it confidential. The nurse managers where you are employed will not be informed of your participation or non-participation in the evaluation portion of the study. Your individual responses will be reported as aggregate data, quotes, and in descriptive form with no disclosure of your identity.

How will my anonymity be protected?

Anonymity refers to protecting participants' identifying characteristics, such as name or description of physical appearance. Every reasonable effort will be made to ensure your anonymity; you will not be identified in publications without your explicit permission.

How will the data collected be stored?

All written data will be kept in a locked cupboard. All electronic data will be password protected. Study data, including personal information about you, will be securely stored for five years after the study is over, at which time paper data will be destroyed by shredding and audio and computer data will be destroyed by double deletion. I will ask you to choose a pseudonym, which will be used to compile data following the interview(s). I will not link any of your identifying information to the data and will store your data on my private password protected home computer using password protected applications, as well as on my private password protected external hard drive that will be kept in a secure locked box in my home office when not in use.

Who will receive the results of the research project?

The existence of the research will be listed in an abstract posted online at the Athabasca University Library's Digital Thesis and Project Room and the final research paper will be publicly available. With your permission, I may use some of your direct quotations in the findings; however, most of the data will be reported in an aggregate or summarized form. I may publish the findings and/or present them at various conferences, but these activities will not contain any information that would identify you. If you desire, you can have access to the findings prior to publication. Within the five years of data storage, I may wish to use the data for future analysis; if I do, it will have to be approved by you and a Research Ethics Board.

Who can you contact for more information or to indicate your interest in participating in this research project?

Thank you for considering this invitation to participate in my research project. If you choose to

participate, email or telephone me, Jean Smith (the principal researcher), at
jsmith39@athabasca.edu or (403) 845-0423 or my supervisor Dr. Debra Hoven at
debrah@athabascau.ca or 1-866-441-5517. If you are ready to participate in this research project,
please complete and sign the attached consent form and email it to jsmith39@athabasca.edu.

Thank you,
Jean C. Smith
**This project has been reviewed by the Athabasca University Research Ethics Board and
the Red Deer Polytechnic Research Ethics Board. Should you have any comments or
concerns regarding your treatment as a participant in this project, please contact the
Athabasca University Research Ethics Office by email at rebsec@athabascau.ca or by
telephone at 1-800-788-9041, ext. 6718; or the Red Deer Polytechnic Research Ethics Office
by email at ethics@rdpolytech.ca or by telephone at 1-888-732-4630.**

Informed Consent: (For all interviews)

By completing this survey/questionnaire you agree that:
- You have read the information about the research project.
- You have been able to ask questions about this project.
- You are satisfied with the answers to any questions you may have had.
- You understand what the research project is about and what you will be asked to do.
- You understand that you are free to withdraw your participation in the research project up
  to when the analysis of your data begins, without having to give a reason, and that doing
  so will not affect you or your employment now, or in the future.
- You understand the benefits of participating in the study.
- You understand the risks associated with participating in the study.
- You understand that if you choose to end your participation **during** data collection, any
  data collected from you up to that point will be destroyed.
- You understand that your data is being collected privately and confidentially, and
  therefore cannot be removed once the data collection has ended.
- You understand who will have access to your records and personally identifying
  information.

By initialing the statement(s) below,

_____ I am granting permission for the researcher to use an audio- or video-recorder.

_____ I agree to the use of direct quotations using my pseudonym, without identifying me.

_____ I am willing to participate in a follow-up interview to add clarity or depth to the findings.

_____ I would like to receive an e-copy of the results of this research.

    e-mail address: _____

_____ I am granting permission for the researcher to contact me at a later time (no longer than six months after my interview) by email or telephone for a brief conversation to confirm that they accurately understood my comments in the interview.

_____I would like to receive the gift card / prize draw by letter mail.

mailing address:

_____

Your signature confirms:
You have read what this research project is about and understand the risks and benefits. You have had time to think about participating in the project, had the opportunity to ask questions, and your questions have been answered to your satisfaction.

You understand that participating in the project is entirely voluntary and that you may refuse to answer any questions and/or end your participation up until the point of your data being analyzed. If you choose to withdraw from the study, there will be no penalty or negative consequences for you.

You have been given a copy of this Informed Consent form for your records; and

You agree to participate in this research project.

_____   _____
Signature of Participant   Date

I have explained this research project to the best of my ability. I invited questions and responded to any that were asked. I believe that the participant fully understands what is involved in participating, any potential risks, and that they have freely chosen to participate.

_____   _____
Signature of Principal Researcher   Date

Appendix G: Ethics Event Modification Approval

Athabasca University
RESEARCH CENTRE

CERTIFICATION OF ETHICAL APPROVAL - REVISED

The Athabasca University Research Ethics Board (REB) has reviewed and approved the research project noted below. The REB is constituted and operates in accordance with the current version of the Tri-Council Policy Statement: Ethical Conduct for Research Involving Humans (TCPS2) and Athabasca University Policy and Procedures.

Ethics File No.: 24862

Principal Investigator:
Mrs. Jean Smith, Doctoral Student
Faculty of Humanities & Social Sciences\Doctor of Education (EdD) in Distance Education

Supervisor/Project Team:
Dr. Debra Hoven (Supervisor)

Project Title:
Just-In-Time Learning Activities of Registered Nurses Using Blended Resources in the Rural Hospital Workplace

Effective Date: September 2, 2022   **Expiry Date:** September 01, 2023

Restrictions:
Any modification/amendment to the approved research must be submitted to the AUREB for approval prior to proceeding.

Any adverse event or incidental findings must be reported to the AUREB as soon as possible, for review.

Ethical approval is valid *for a period of one year*. An annual request for renewal must be submitted and approved by the above expiry date if a project is ongoing beyond one year.

An Ethics Final Report must be submitted when the research is complete (*i.e. all participant contact and data collection is concluded, no follow-up with participants is anticipated and findings have been made available/provided to participants (if applicable)*) or the research is terminated.

Approved by: **Date: September 02, 2022**

Paul Jerry, Chair
Athabasca University Research Ethics Board

_____

Athabasca University Research Ethics Board
University Research Services Office
1 University Drive, Athabasca AB Canada T9S 3A3
E-mail rebsec@athabascau.ca
Telephone: 780.213.2033

Appendix H: Participant Consent Form

Just-In-Time Learning Activities of Registered Nurses Using Blended Resources
in the Rural Hospital Workplace

Principal Researcher: **Supervisor:**
Jean C. Smith, RN, MN   Dr. Debra Hoven
jsmith39@athabasca.edu   debrah@athabascau.ca
(403) 845-0423   1-866-441-5517

You are invited to participate in a research study about the just-in-time learning activities of registered nurses using blended resources in the rural hospital workplace. Just-in-time learning activities is a term that refers to the thinking and actions of you or a group of people when engaging in learning quickly and in-the-moment. Blended resources include the human or tangible learning resources that you access in the rural hospital workplace online, by telephone, or in-person. I am conducting this study as a requirement to complete my Doctor of Distance Education degree.

As a participant, you are asked to take part in either an audio- or video-recorded interview. This interview will be conducted in one of three ways: virtually using Microsoft Teams, by telephone, or in-person. I would like to know about what blended resources best support your just-in-time learning activities in the rural hospital workplace. I will begin the interview by asking you to choose a pseudonym followed by asking you questions about your age, marital status, ethnic/cultural background, duration of employment in the rural hospital workplace, duration of employment as a rural registered nurse, previous work experience, and any additional details that you may wish to include. I will then ask you to share your story about how blended resources support your just-in-time learning activities in the rural hospital workplace, after which I will ask you questions about your just-in-time learning experiences.

The interview will take approximately one hour of your time. I may also ask you to participate in a follow-up interview to clarify points or to add depth to the findings, which would also require one hour of your time. Once I have transcribed your interview to text, I will provide you with the transcript via email for you to review for accuracy and to add or delete information, which will require approximately one hour of your time. I ask that you return the revised transcription to me via email within 14 days of receiving it.

Your participation in this study is voluntary and as such, there is minimal risk to you. You may refuse to answer any questions or share information that you are not comfortable sharing. You may withdraw from the study at any time during the collection of your data and prior to any analysis of your data. Any information that had been collected would be immediately deleted.

If you do consent to participate, you have not waived any rights to legal recourse in the event of research-related harm. There is a chance you may feel uncomfortable sharing some of your thoughts and feelings. You do not have to answer questions if you do not want to. If you become upset, there will be someone you can speak to in your employer's Employee Assistance Program. Any information that has been written down or recorded will not be used unless you give your

permission. Any information can immediately be deleted. For your participation, I will give you a $10 Tim Horton's gift card. In addition, if you want, you can put your name into a draw for a $100 gasoline voucher. At the end of the study, I will draw a name and the winner will be sent the voucher and information by registered mail.

If you want, I can send you an e-copy of the study once it has been completed.

None of your identifying information will be linked to the data. I will ask you to choose a pseudonym, which will be used to compile data following the interview(s). My dissertation supervisor and I will be the only people who will have access to your data, and we will keep it confidential. The nurse managers where you are employed will not be informed of your participation or non-participation in the evaluation portion of the study. Individual responses will be reported as aggregate data, quotes, and in descriptive form with no disclosure of your identity.

All written data will be kept in a locked cupboard. All electronic data will be password protected. Study data, including personal information about you, will be securely stored for five years after the study is over, at which time paper data will be destroyed by shredding and computer and audio data will be destroyed by deletion.

The findings may be shared in publications and/or at various conferences, but these activities will not contain any information that would identify you. If you desire, you can have access to the findings prior to publication. Within the five years of data storage, I may wish to use the data for future analysis; if I do, it will have to be approved by you and a Research Ethics Board.

 If you have any questions about this study or require further information, please contact Jean Smith or Dr. Debra Hoven using the contact information provided at the beginning of this form.

This project has been reviewed by the Athabasca University Research Ethics Board and the Red Deer Polytechnic Research Ethics Board. Should you have any comments or concerns regarding your treatment as a participant in this study, please contact the Athabasca University Office of Research Ethics at 1-800-788-9041, ext. 6718 or by e-mail to rebsec@athabascau.ca or the Red Deer Polytechnic Office of Research Ethics by email at ethics@rdpolytech.ca or by telephone at 1-888-732-4630.

Thank you for your assistance in this study.

CONSENT:

I have read the Letter of Information regarding this research study, and all of my questions have been answered to my satisfaction. I will keep a copy of this letter for my records.

My signature below confirms that:

- I have read the information about the research project.
- I have been able to ask questions about this project.
- I am satisfied with the answers to any questions I may have had.
- I understand what the research project is about and what I will be asked to do.

- I understand that my participation is voluntary and that I am free to withdraw from the research project up until the analysis of my data, without having to give a reason, and that doing so will not not affect me or my employment now, or in the future.
- I understand the benefits of participating in the study.
- I understand the risks associated with participating in the study.
- I understand that if I choose to end my participation **during** data collection, any data collected from me up to that point will be destroyed.
- I understand that my data is being collected privately and confidentially, and therefore cannot be removed once the data collection has ended.
- I understand who will have access to my records and personally identifying information.
- I am aware that I may contact the researcher (Jean Smith), her supervisor (Dr. Debra Hoven), or the identified Offices of Research Ethics if I have any questions, concerns, or complaints about the research procedures.

Name: _____

Date: _____

Signature: _____

By initialing the statement(s) below,

_____ I am granting permission for the researcher to use a video- and/or audio-recorder.

_____ I acknowledge that the researcher may use specific quotations of mine, without

identifying me.

_____ I am willing to participate in a follow-up interview to add clarity or depth to the findings.

_____ I would like to receive an e-copy of the results of this research.

 e-mail address: _____

_____I am granting permission for the researcher to contact me at a later time (no longer than six months after my interview) by email or telephone for a brief conversation to confirm that they accurately understood my comments in the interview.

_____I would like to receive the gift card / prize draw by letter mail.

mailing address:

_____

Appendix I: Initial Interview Guide

To what extent do RNs in the rural hospital workplace perceive that blended resources support their just-in-time learning activities? The term just-in-time learning activities refers to the thinking and actions you engage in by yourself or with others when learning quickly and in-the-moment. Blended educational resources include the human or tangible learning resources that you access in the rural hospital workplace online, by telephone, or in-person.

1. Please describe a recent incident in your work in which you needed to quickly learn something in-the-moment.

2. Tell me about the internal decision-making processes you used during that the previous incident you just described or another situation in which you had to learn quickly and in-the-moment. In your experience, which processes worked best? Why? Talk me through how these processes unfold/ed for you.

3. Please describe the situations in your workday that require you to engage in thinking and actions to learn quickly and in-the-moment? What makes each of these situations more or less challenging? Situations can be obvious or simple (answers are obvious and decisions are based on evidence), complicated (there may be more than one correct possible answer and several unknowns), complex (there are no single right answers and several competing ideas), or chaotic (there are many unknowns, high tension, and no time to think).

4. Tell me about the blended educational resources you use when having to learn quickly and in-the-moment at work. In other words, what human and tangible resources do you use? Some examples include the people you work with, people in other areas of the hospital or in another hospital, and online resources you access via your phone or a computer.

5. How do you determine which blended educational resources you need for a particular

situation? What factors impact these decisions? How? Why?

6. In what ways are some blended educational resources in the hospital workplace better than others? Why?

7. How do blended educational resources in the rural workplace impact your confidence in your ability to practice safely during in-the-moment learning of information or skills that are needed for simple or obvious situations? Why? What human or tangible resources could make these situations better?

8. How do blended educational resources in the rural workplace impact your confidence in your ability to practice safely during in-the-moment learning of information or skills that are needed for complicated, complex, or chaotic situations? Why? What human or tangible resources could make these situations better?

9. Please tell me any other information that you would like to share about what it is like to learn in-the-moment using blended educational resources in the rural hospital workplace.

Appendix J: Interview Guide with First Modification

To what extent do RNs in the rural hospital workplace perceive that blended resources support their just-in-time learning activities? The term just-in-time learning activities refers to the thinking and actions you engage in by yourself or with others when learning quickly and in-the-moment. Blended resources include the human or tangible learning resources that you access in the rural hospital workplace online, by telephone, or in-person.

1. Please describe a recent incident in your work in which you needed to quickly learn something in-the-moment.

2. Tell me about the internal decision-making processes you used during that the previous incident you just described or another situation in which you had to learn quickly and in-the-moment. In your experience, which processes worked best? Why? Talk me through how these processes unfold/ed for you.

3. Please describe the situations in your workday that require you to engage in thinking and actions to learn quickly and in-the-moment? What makes each of these situations more or less challenging? Situations can be obvious or simple (answers are obvious and decisions are based on evidence), complicated (there may be more than one correct possible answer and several unknowns), complex (there are no single right answers and several competing ideas), or chaotic (there are many unknowns, high tension, and no time to think).

4. Tell me about the blended educational resources you use when having to learn quickly and in-the-moment at work. In other words, what human and tangible educational resources do you use? Some examples include the people you work with, people in other areas of the hospital or in another hospital and online resources you access via your phone or a computer.

5. How do you determine which blended educational resources you need for a particular

situation? What factors impact these decisions? How? Why?

6. In what ways are some blended educational resources in the hospital workplace better than others? Why?

7. How do blended educational resources in the rural workplace impact your confidence in your ability to practice safely during in-the-moment learning of information or skills that are needed for simple or obvious situations? Why? What human or tangible educational resources could make these situations better?

8. How do blended educational resources in the rural workplace impact your confidence in your ability to practice safely during in-the-moment learning of information or skills that are needed for complicated, complex, or chaotic situations? Why? What human or tangible educational resources could make these situations better?

9. How might short, stand-alone blended courses or a series of blended courses that stack into a rural nursing certificate, support your just-in-time learning activities? What content would you recommend including in these courses? Some potential examples might include a course about emergency nursing, one for obstetrical care, one about medical-surgical nursing, and another pertaining to patients' mental health. These courses would consist of small components that you could choose between to best meet your learning needs and then could be stacked together with the other courses to obtain the rural nursing certificate.

10. Please tell me any other information that you would like to share about what it is like to learn in-the-moment using blended educational resources in the rural hospital workplace.

Appendix K: Interview Guide with Second Modification

To what extent do RNs in the rural hospital workplace perceive that blended resources support their just-in-time learning activities? The term just-in-time learning activities refers to the thinking and actions you engage in by yourself or with others when learning quickly and in-the-moment. Blended resources include the human or tangible learning resources that you access in the rural hospital workplace online, by telephone, or in-person.

1. Please describe a recent incident in your work in which you needed to quickly learn something in-the-moment.

2. Tell me about the internal decision-making processes you used during that the previous incident you just described or another situation in which you had to learn quickly and in-the-moment. In your experience, which processes worked best? Why? Talk me through how these processes unfold/ed for you.

3. Please describe the situations in your workday that require you to engage in thinking and actions to learn quickly and in-the-moment? What makes each of these situations more or less challenging? Situations can be obvious or simple (answers are obvious and decisions are based on evidence), complicated (there may be more than one correct possible answer and several unknowns), complex (there are no single right answers and several competing ideas), or chaotic (there are many unknowns, high tension, and no time to think).

4. Tell me about the blended educational resources you use when having to learn quickly and in-the-moment at work. In other words, what human and tangible educational resources do you use? Some examples include the people you work with, people in other areas of the hospital or in another hospital and online resources you access via your phone or a computer.

5. How do you determine which blended educational resources you need for a particular

situation? What factors impact these decisions? How? Why?

6. In what ways do clinical resource nurses support (or not support) your just-in-time learning activities?

7. In what ways are some blended educational resources in the hospital workplace better than others? Why?

8. How do blended educational resources in the rural workplace impact your confidence in your ability to practice safely during in-the-moment learning of information or skills that are needed for simple or obvious situations? Why? What human or tangible educational resources could make these situations better?

9. How do blended educational resources in the rural workplace impact your confidence in your ability to practice safely during in-the-moment learning of information or skills that are needed for complicated, complex, or chaotic situations? Why? What human or tangible educational resources could make these situations better?

10. How might short, stand-alone blended courses or a series of blended courses that stack into a rural nursing certificate, support your just-in-time learning activities? What content would you recommend including in these courses? Some potential examples might include a course about emergency nursing, one for obstetrical care, one about medical-surgical nursing, and another pertaining to patients' mental health. These courses would consist of small components that you could choose between to best meet your learning needs and then could be stacked together with the other courses to obtain the rural nursing certificate.

11. In what ways does the conceptual model (see Page 5) I have developed resonate (or not resonate) with your just-in-time learning activities in the rural hospital workplace? In what way/s could I make it better?

12. Please tell me any other information that you would like to share about what it is like to

learn in-the-moment using blended educational resources in the rural hospital workplace.
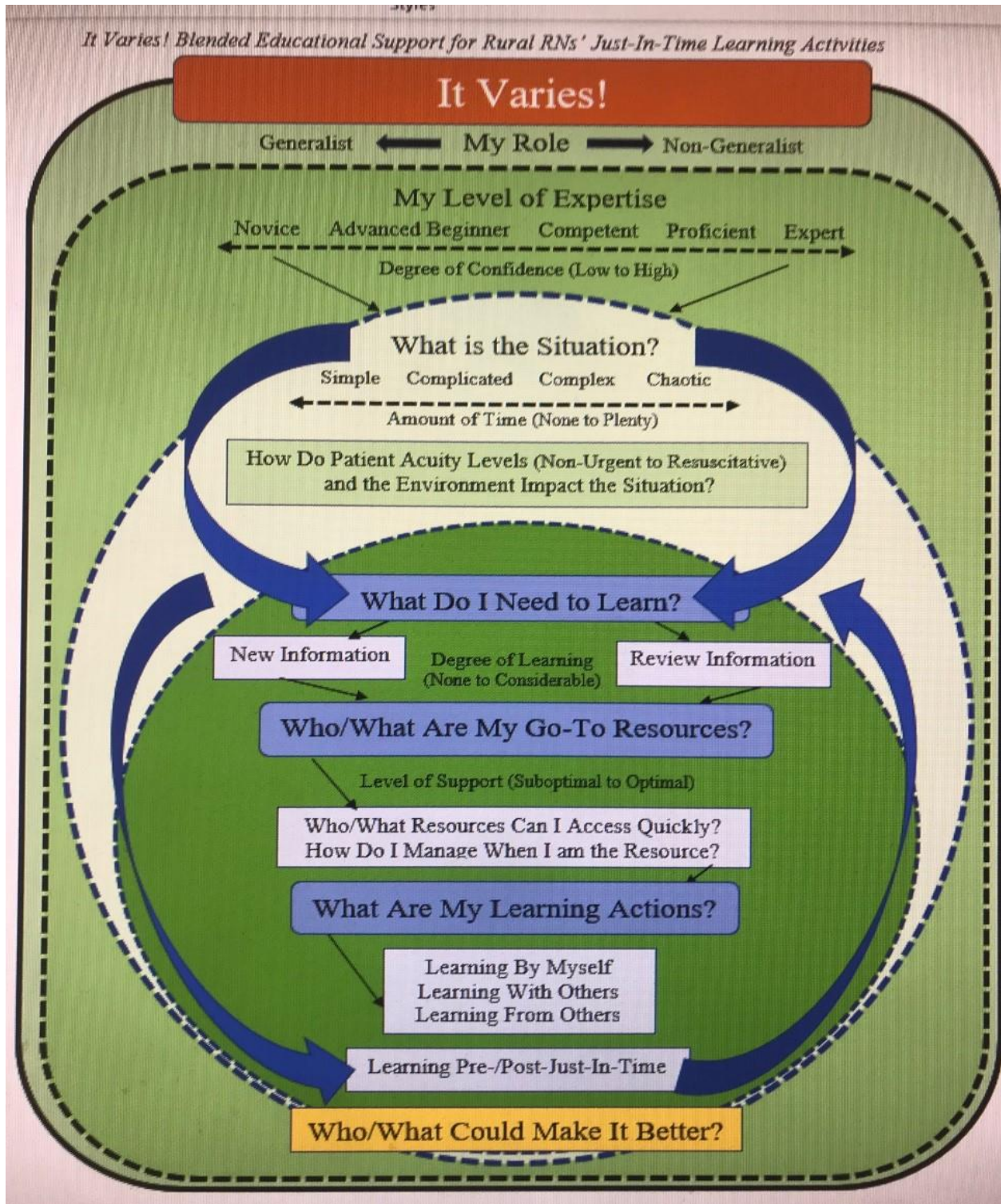
It Varies! Blended Educational Support for Rural RNs' Just-In-Time Learning Activities

Appendix L: Demographic Data Form

Just-In-Time Learning of Registered Nurses Using Blended Resources

in the Rural Hospital Workplace

Pseudonym _____**Date of Interview**_____

Personal Information

      Initials_____

      Address _____

      Phone Number/Email _____

Age _____ Gender _____ Marital Status _____

Cultural Background _____

Year Graduated_____

Number of months or years employed in the rural hospital workplace _____

Number of months or years employed in nursing _____

Are you employed full-time_____ part-time _____casual _____

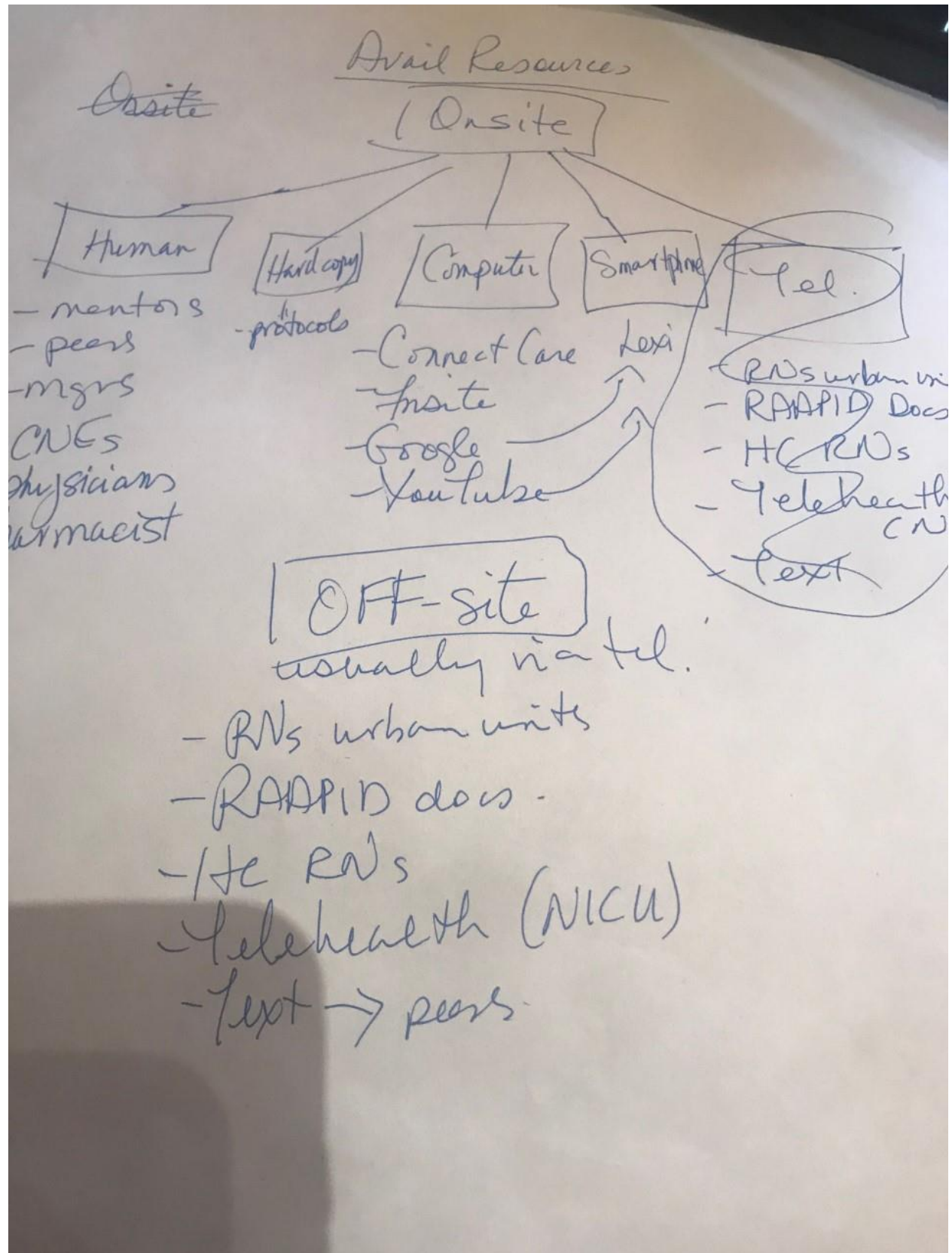Level of education _____

Previous rural hospital work experience

None_____ Some _____Amount_____

Details (where, what area/s) _____

Previous urban acute care experience _____

Details (where, what area/s) _____

Appendix M: Example of a Spider Concept Map

Appendix N: Example of Unitized Data

what are things that make it easier for you when you encounter these situations? 10:11 I think it's easier for me because I have been nursing for so long that I have, have a more realistic sense of the things that I don't know. And I know if I don't know the answer, I at least know where to look.	8/Lucy/C/9/13/1	*Time spent nursing – knowing what I know/don't know and where to find answers
Can you describe that a little bit further for me, how it's a barrier. 11:16 Like in my world, I would think that I should be able to go on to Insite and go under policies and procedures and put in the specific thing that I'm looking at and have that pop up. But when you go into the policy and procedure manual, there's like policies from the early 2000s from health regions that don't even exist anymore. So why is all of that nonsense on there? And, when it's been replaced by a new policy, why don't I just have the most current up to date policy immediately pop up?	9/Lucy/C/9/13/1	Lack of up-to-date online policy resources
So when you think about simple or obvious situations, and you know, what makes those situations easy to handle, or maybe more challenging to handle. I'd like to hear both ends of that. 13:18 Hmm! I think it's it's like a simple thing in terms of like you say looking up a medication or whatever. We have lots of computers around that have um the provincial monographs and you know, Lexicomp, whatever that other one is, like we have lots of access to it. 13:45 But sometimes, 13:47 it's like, unless you've got the icon saved on the computer. It's sometimes a little difficult. Whereas, you know, sometimes you can just go to your cell phone and Google what you wanna know but then having to take into account it is Google, so it's not necessarily true.	10/Lucy/C/9/13/1	Good access to online resources - Abundance of computers Computers can slow efficiency

Appendix O: Example of Categorized Data

Navigating Unknown Care/Procedures/Documents
- Caring for people with diagnoses not familiar with   3/Lucy/C/9/13/1 - Transfers from urban – treatments can be ones unknown   10/Daisy/N/9/14/1 -Unknown procedures; complicated situations   1/Ned/C/9/30/22/1 -unknown treatments; peds trauma   1/Chantal/N/10/27/1 - As a new grad was giving medications I had never heard of while also being in charge 4/Chantal/N/10/27/1 -New grad working July long weekend – in charge – peds emergency; Immediately uncomfortable because the patient is peds - 6/Chantal/N/10/27/1 -Not as knowledgeable about peds; Situation to just do – with orders from RAAPID at the same time had to manage a patient experiencing a STEMI – now multiple orders from RAAPID for both patients 6/Chantal/N/10/27/1 -chaos: STEMI patient coded and peds respiratory patient had to be left alone - In-the-moment (simple situation) have dealt with JIT learning and then accessed HC resource later (i.e. IVAD management) 7/Chantal/N/10/27/1 -- In-the-moment (simple situation) have dealt with JIT learning and then accessed HC resource later (i.e. IVAD management) 4/Mel/Edm/10/27/1 - Providing treatments ordered in urban – lacking supplies (i.e. wound dressing); Little experience with doing wound vac dressings 1/Ric/Cal/11/15/1; 2/Ric/Cal/11/15/1 -infrequently performed tasks for patient from urban 1/Jane/C/11/16/1 -More and more are caring for people with treatments infrequently done in this rural hospital (wound vacs, chest tubes, trach care); RT taught trach care to some but otherwise depended on cheat notes in the pt's room 16/Jane/C/11/16/1 - JIT learning to learn how to do trach care on nite shift with an LPN – did step by step with the policy; have done step by step with a colleague in ER removing a PICC line 17/Jane/C/11/16/1 - Constant change reduces routine procedures resulting in JIT learning 44/Mel/Edm/10/27/1 - JIT learning during 3 person trauma to use new trauma record –enabled performing step by step tasks and not missing any important aspects of care 25/Jane/C/11/16/1 - JIT learning caring for a patient who died and morgue was unavailable 1/Tina/S/12/9/1 -JIT learning to create a home made Pleurex drainage system 4/Tina/S/12/9/1 -JIT learning when called to Emerg to assist with a patient experiencing CVA (I didn't know that was the diagnosis) – physician and senior nurse were barking orders 10/Tina/S/12/9/1 -Learning how to conduct a visual acuity test on a pediatric patient 15/Tina/S/12/9/1 -Unknown of what needs to be known 7/Lucy/C/9/13/1 *Managing jit learning of COVID was awful – rules from urban didn't always work in rural 18/Lucy/C/9/13/1 Simple situation: JIT learning occurs when medications prescribed are for something other than their normal use; clarified with physician as pharmacy was not available 3/Ric/Cal/11/15/1

Appendix P: Example of Thematized Data

Thinking about the JIT Learning Trigger – change to Interpreting the Learning Trigger Using Intrinsic Cognitive Processes January 27/23 – Engaging in the JIT Learning Cycle	Use all 3 types of cognition for all aspects of JIT learning: Consider when analytic, intuitive, and deliberative cognitions are used – more time analytic and deliberative, less time rely on intuitive and deliberative Think about Incorporating Bloom's Taxonomy – Cognitive Domain and Krathwohl and Smith's (2005) Affective Domain
Expert **Providing JIT Teaching** -Expert RN looks around and decides what is needed. Asks self is there leadership? What are the roles? 24/Ned/C/9/30/22/1 - Some routine situations for one may be complicated or complex for others – related to experience 10/Ned/C/9/30/22/1 - Less experienced people exhibit unclear thinking during chaotic situations (blinders on) 24/Ned/C/9/30/22/1 - Internal decision-making – ensure that I know the big picture of what is happening in the hospital - So what kind of surgeries are being done in the OR? Who's the Emerg Doc? And what are their personalities? And what are they gonna bring to the table in there? What's going on on the acute care floor - who's sick, who isn't sick, and so on and so forth. For unanticipated situations: You walk into Emerg we need help. What do you need help for? Do you need help simply because you've got 12 people with colds and sniffles, but nobody's got an airway compromise, or are you actively doing CPR? And that's it. It's tough. But, you know, depending on what corner of the hospital you're going to, you can usually have some basic assessment of what you're likely to walk into when they holler for help 10/Ashley/Cal/11/15/1 **-** No formal code team; important to know who's who in the zoo (strengths of the team) 19/Ashley/Cal/11/15/1	**What is this about?** **What does the expert do differently than those less experienced?** **What is the expert thinking?** **How does the expert support?**

Appendix Q: Example from My Research Journal

April 5, 2023 – Ponderings! Yesterday I completed reviewing in their entirety each participant's transcript. In addition, I added any perceptions from each that were not initially included in the themes and subthemes I had generated. I have also been pondering about the dimensions for each theme as I have added new information to the Findings. My latest rendition of dimensions consists of the following: Amount of time (none to plenty), Degree of Learning (none to considerable), Level of Support (minimal to maximal), and Degree of Confidence (low to high). These dimensions evolved as I realized that some situations afforded no time for learning, for some experts the degree of learning was sometimes none, and the degree of confidence was clearer as low to high. As well, I have included the dimension Level of Urgency (low to high priority) as an antecedent to Amount of Time (none to plenty), as participant's perceptions of the situations (simple to chaotic) they encountered indicated that the former contributed to the latter.

In the It Varies! model, the subtheme What Are My Learning Actions? I changed Learning Pre- and Post-Just-In-Time to up and down arrows to reflect learning outside of the just-in-time learning cycle that often supported just-in-time learning but was influenced by My Role, My Level of Expertise, and What is the Situation? In turn, Learning Pre-Just-In-Time impacted What are My Learning Actions? And Learning Post-Just-In-Time stemmed from What are My Learning Actions?

April 7, 2023 – Collapsing Subtheme – How does the environment impact my resources? Yesterday, I began working through each theme to ensure the dimensions are appropriate. When doing so, I realized in the What is the Situation? theme that there were participant perceptions in the subtheme How does the environment impact my resources that are better suited to it and others that are better suited for the Who/What Resources Can I Access Quickly? subtheme. Therefore, How Does the Environment Impact My Resources? will be collapsed.

April 12, 2023 – The last 4 days I have been ensuring that the dimensions for each theme are threaded through the themes/subthemes as appropriate. However, I have been struggling with the suitability of minimal to maximal for Level of Support. Today, I will change those terms to suboptimal, adequate, and optimal as these terms seem to fit the participants' perceptions of level of support more effectively.

In addition, I have looked at the length of each theme and today will work to reduce the length of Who/What are my go-to resources as it is exceptionally long.

In terms of my biases, I have used CTAS (a standardized tool) to identify patient acuity levels to ensure that I appropriately assign the dimension of non-urgent to resuscitative rather than just my knowledge of how to triage patients.