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Patient-Perspective Task Performance: Creating Contextually Relevant Student Clinical Training Through the Use of Patient Experience

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PATIENT-PERSPECTIVE TASK PERFORMANCE:

CREATING CONTEXTUALLY RELEVANT STUDENT CLINICAL

TRAINING THROUGH THE USE OF PATIENT EXPERIENCE

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ABSTRACT

PATIENT-PERSPECTIVE TASK PERFORMANCE: CREATING CONTEXTUALLY RELEVANT STUDENT CLINICAL TRAINING THROUGH THE USE OF PATIENT EXPERIENCE

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Old Dominion University, 2021
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Patient-centered and patient-focused care purports that patients are at the center of all clinical decisions made for optimal medical outcomes. Optimal medical outcomes originate from accurately and reliably executed task performance by healthcare professionals trained to administer highly specific care for each patient condition. Many of these executed tasks are performed in the presence of the patient; this is defined as direct patient care. However, there are equally important tasks executed that are not performed in the presence of the patient; the performance of diagnostic laboratory testing is an example of such tasks.

Clinical training of healthcare laboratory professionals begins with enrollment into degree-based or certificate-based training programs designed to instruct students on theory and practice of diagnostic testing and associated tasks that support testing. This instruction comes in the form of didactic coursework and clinical practicums performed in a hospital or clinic-based setting. Most of the instruction clinical students receive is designed by college faculty who teach within Clinical Laboratory Science and Medical Laboratory Technology programs, and their students complete all practical training in the hospital clinical laboratory setting.

This study examined how these clinical training experiences are created to include patient experience and what instructional strategies are used in clinical training for Medical Technology students. A qualitative case study design sought to describe how faculty, and the instructional designers who assist them, design program curriculum to include the patient perspective, which

is used to create instructional strategies to enhance the patient experience. Findings show that little purposeful planning and design exists for patient experience inclusion within the design of curriculum; however, clinical training instructional strategies indirectly teach the concept using various types of case-based scenarios aligned to intended purpose and expected outcome.

This dissertation is dedicated to the individual who knows that failing does not equate to failure and that mistakes do not mean misfortune; this individual embodies the phrase,

You live, you learn. -Morrisette

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IDT 6. Thank you for the intellectual and extensive thread of text messages. Wonder just how much we learned through this means of communication? Coursework would have never been the same each of you and watching each of you complete this journey inspired and encouraged me to do the same. A cohesive CoP until the end. My appreciation for each of you and your individual perspectives and knowledge bases will never end.

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Finally, to that personality that called me an imposter for most of my life - here's to you for making me see things from different perspectives and for the constant internal battles. Our conversations constantly astound me, and our disagreements often amuse me. You will be with me forever, and forever I will tell you to shut the hell up! It is because of you that I am here.

NOMENCLATURE

Case-based Learning - Instruction using specific scenarios focused on promoting discussion and reflection on information and tasks learned by the student.

Centers for Medicare and Medicaid (CMS) - A part of the Department of Health and Human Services, overseeing various healthcare related services and regulating specific aspects of services rendered.

Cognitive Apprenticeship - A constructivist approach to learning whereby someone who has mastered a task engages in and directs the learning of an apprentice to collaboratively demonstrate performance through observation, modeling and reflective practice.

Complex Learning - The integration of cognitive, psychomotor, and affective domains of learning, combined to execute specific, complex performance tasks.

Context of Use- Where and how the learned information will be utilized. This is used to focus the instructional process and develop an aligned and relevant instructional process. Not to be confused with Localized Context of Use

Contextual analysis - Analysis of the situation where task performance will be executed.

Continuing Medical Education (CME) - Professional development events offered to and completed by medical professionals after initial training and education has been completed.

Continuous Quality Improvement (CQI) - A cyclical, evaluative, and iterative process of quality improvement whereby complete and total improvement of a process is never fully achieved but rather strived for, continually.

Experiential Learning - Learning that takes place through direct experience and through reflection on associated task performance.

Hospital Consumer Assessment of Healthcare Providers and Systems (HCAHPS) - A Centers for Medicare and Medicaid system that surveys patients on their experience with healthcare entities and the care received while admitted.

Learner analysis - This is conducted as part of the front-end analysis and defines who the users of the instructional or non-instructional intervention will be.

Localized context of use - The literal point of knowledge application and associated task performance. This is using the information learned for the intended context at the point of need.

Medical Laboratory Technology (MLT) - Field of allied health science focused on diagnostic testing and reporting of patient blood and body fluid specimens.

Needs assessment and analysis - This is conducted as part of the front-end analysis and serves to define the current, as-is state, and the desired state of the system.

Patient Experience Design (PXD) - Design considerations that view the system from the patient's perspective and through their experience within the context of use.

Patient-perspective Task Performance (PPTP) - The performance of clinical tasks that will directly impact patient care, viewed from an empathic perspective regarding how task performance will affect the patient holistically.

Positive Patient Experience (PPE) - A healthcare service that meets or exceeds patient expectations, generating a positive service-related experience.

Situated learning - Learning that takes place in the same contextual location as where it will be applied. Foundational to complex learning and cognitive apprenticeship.

TABLE OF CONTENTS

LIST OF TABLES

Table

LIST OF FIGURES

Figure

CHAPTER 1

INTRODUCTION

The basic definition of service is the work performed by an individual who serves others (Merriam Webster, 2020). Work performed by one person for another's need or request, this is the heart of the work performed in healthcare institutions, clinics, and acute care hospitals. To provide highly specific healthcare means to know and to clearly understand the needs of those served in order to align professional standard work performed with the expectations of patients seeking care (Kohn et al., 2000). To successfully accomplish this, healthcare professionals must have knowledge of their profession, institution expectations, and, most importantly, the overall expectations of the patient seeking healthcare services provided by the facility.

Background and Overview

Delivering healthcare services requires a deep understanding of the perspective of each stakeholder in the process, especially the patient, and is highly empathic (Mosadeghrad, 2014). Knowledge of the patient's expectation of service delivered is paramount and vital if the healthcare provider is to successfully execute prescribed, patient care-related workplace tasks intended to improve and maintain patient health, while at the same time creating a positive patient experience. Because each patient's perspective varies, determining how to meet their expectations can be a perceived insurmountable feat (Desborough et al., 2019). However, by operationalizing the meaning of a positive patient experience (PPE), healthcare training professionals can use this information in the design of training and professional development material used for educating students enrolled in degree or certificate-based training programs (Flott, 2017). Operationally, a PPE can be defined as a healthcare service that meets or exceeds patient expectations, whereby the patient is completely satisfied with the service encounter.

At the heart of serving patients is ensuring their patient experience is positive and one that meets their expectations (Kumah, 2019). The challenge with this is uncovering what their expectations really are and how they envision the delivery of their care. Because the number of expectations is as numerous as are differing patient needs and backgrounds, a significant challenge arises in comprehensively capturing this information and using that information to drive the creation of clinical training intended to teach and develop healthcare professional skill sets. Capturing this information is achieved through the performance of systematically designed, comprehensive investigation that includes both learner and patient analytical phases. Historically, consideration for patient-specific expectations and needs directly related to the purpose of the instructional design product has not been taken into consideration during the design phase of the systematic instructional design process (Clark, 2014). This study seeks to uncover how formal clinical training programs are designed to include this perspective.

Purpose of the Study

The purpose of this study was to examine how a Medical Laboratory Technology (MLT) associate degree program at one public community college designs student clinical training experiences that make meaningful considerations for the patient experience and patient satisfaction. The overall goal of this study was to explain how healthcare student clinical training is created to include patients as primary stakeholders and secondary end users of information learned by healthcare professionals. This information was used to provide recommendations and guidance on the systematic instructional design process for a variety of clinical training programs at public community colleges and institutions of higher learning where healthcare training programs are offered.

Study Objectives

A desired outcome of this study was to uncover instructional design strategies that can be applied by college faculty to design student clinical training experiences that provide a meaningful consideration for how work performed impacts not only patient care but the overall patient experience. Because the design of clinical training curricula is complex and involves the integration of numerous skill sets and methodologies, clinical training design has been historically focused on mastery of tasks rather than how the mastery of those tasks impacts patient perception of care delivered (Gonzalo et al., 2017). This study aimed to uncover how the integration of both task mastery and patient perception impacts the overall meaningful use of training products. By achieving this, heuristics can be proposed that will result in an optimal student training experience that is inclusive of both the student and the patient.

Problem Statement

The design of both instructional and non-instructional training resources must include a design phase that incorporates an assessment of individuals intended to utilize the training or resource (Morrison et al., 2019). There is a gap in this design phase, examining the individuals impacted by learner performance of mastered tasks associated with the training product. In healthcare, that individual is the patient. Consideration for the patient impacted by information learned and used by the healthcare professional is of vital concern and will serve to impact patient experience and patient satisfaction scoring as assessed by the healthcare industry.

Working in healthcare means that the employee is working within an environment of continuous quality improvement (CQI). Under this CQI model, healthcare workers understand that there are always opportunities for improvement, specifically in ways to improve patient care. Because of this, there is a need in healthcare to continually evaluate patient experience and

patient satisfaction; in fact, it is a Center for Medicare and Medicaid (CMS) requirement to monitor and report patient satisfaction scoring in eight key areas of patient experience (CMS, 2020). Table 1 provides a visual explanation of the nine key areas as prescribed by the Hospital Consumer Assessment of Healthcare Providers and Systems (HCAHPS). This table also includes explanation of the purpose for surveying the key domain area and the general category describing the impact intent of the domain area. Three categories include communication of care, environment of care, and patient satisfaction. Both communication and environment of care relate directly to the patient services delivered and facility atmosphere, respectively, of the healthcare entity; patient satisfaction encompasses the overall patient experience opinion outcome.

Table 1

Nine key areas of focus on the HCAHPS patient satisfaction survey (CMS, 2020)

	HCAHPS Key Domain	Purpose of Survey Domain	Domain Category
1	Communication with Nursing	Patient satisfaction with communication provided by the nursing staff during the encounter.	Communication of Care
2	Communication with Physicians	Patient satisfaction with communication provided by the attending physician(s) during the encounter.	Communication of Care
3	Communication about medication	Overall explanation and information provided about the medications administered through the encounter, including medical necessity, dosing, frequency, and other expectations such as positive outcomes and potential side effects.	Communication of Care
4	Responsiveness of hospital staff	Overall opinion of how responsive the hospital staff was to the needs of the patient.	Environment of Care
5	Pain Management	Adequate and enough management of pain throughout the patient encounter.	Environment of Care
6	Cleanliness and quietness of hospital environment	Opinion of the hospital environment and cleanliness of the entire facility throughout the encounter.	Environment of Care
7	Discharge instructions	Clarity and thoroughness of discharge instruction delivery upon completion of encounter.	Communication of Care
8/9	Overall rating/Satisfaction	Overall, comprehensive rating of the patient experience during the encounter.	Patient Satisfaction

To assess these nine key indicators of patient satisfaction, hospitals and healthcare providers administer a patient assessment of encounter experience called the Hospital Consumer Assessment of Healthcare Providers and Systems (HCAHPS). It is a requirement by CMS that patients are administered this survey, which is included in hospital scoring reports and is publicly shared with healthcare consumers (CMS, 2020). Although a considerable portion of this information can be obtained through hospital Quality and Safety departments, patient opinion must be gathered by third party entities, independent of the associated healthcare institution. Average hospital HCAHPS scores are utilized to drive Medicare/Medicaid reimbursement to the healthcare organization (CMS, 2020), which is a large revenue stream for most healthcare institutions. Therefore, increasing patient satisfaction is typically an annual goal and part of the strategic plan for most acute care hospitals, both in for-profit and in not-for-profit institutions (Al-Abri et al., 2004).

In response to hospital scoring through HCAHPS survey reporting, healthcare institutions initiate quality improvement programs designed to improve and maintain patient satisfaction. These improvement initiatives are driven by survey outcomes and developed to produce detailed, measurable outcomes assessed by the healthcare institution. Initiatives are often founded in hospital processes exhibiting lower patient satisfaction scores, which can vary between institutions (Arnetz & Arnetz, 1996). Simply stated, the healthcare workforce lives under the canopy of continuous improvement, where, theoretically, 100% is a goal that is never achieved but always strived for improvement. This may not necessarily be the same quality improvement model used in college and university healthcare training programs.

Because not every healthcare training program or healthcare curriculum integrates a CQI model or consideration for the patient experience and satisfaction, there is an opportunity to improve curriculum design with respect to this need. This integration would enhance the affective domain objectives that all program standards require as an inclusive assessment component of training, and consideration for the patient experience would further prepare new healthcare professionals for greater and more impactful considerations of patient care for healthcare workers who deliver both direct and indirect care (Donlan, 2018).

Significance and Need of the Study

The determination and assessment of learning objectives written specifically for the affective domain of learning have historically been some of the most challenging aspects of instructional design and curriculum development (Miller, 2005; Pierre & Oughton, 2007; Olatunji, 2013). Many educators struggle with this determination and relegate their teaching and learning practices within this domain to basic interaction of students and the behavior they exhibit during class (Pierre & Oughton, 2007). Because of this, inclusion of rich affective domain learning objectives, specifically related to the delivery of patient care and consideration for patient satisfaction, can serve to have a positive impact upon workplace task performance performed by healthcare professionals. Instructional designers, college faculty, students, and even patients can potentially benefit from this information and instructional strategies that this study may reveal.

Research Questions

Considering the instructional design of healthcare training program curricula, execution of a systematic, analytical process of design, and the inclusion of patient experience considerations, the following research questions will be answered by this research study:

- How is MLT student clinical training curricula designed to integrate considerations for patient experience and patient satisfaction within context-specific instruction and formal program curriculum?
- What instructional strategies are used to ensure the MLT clinical student is educated about patient experience and patient satisfaction and demonstrates that knowledge in practice?

The objective of this study was to explain how community colleges create student healthcare clinical training curricula to include considerations for how a healthcare professional's task performance impacts patient experience.

Limitations of Research Questions

Limitation of these research questions span several key stakeholders, including the student, clinical trainer, laboratory management and leadership, and the patient. These research questions specifically examined only the analysis and design phases of systematic instructional design; they focus on the initial design phase and how the process is used to determine the integration of patient experience design. The research did not examine how this process impacts the instructional designer, the clinical trainer, or the leadership of instructional environments within healthcare institutions. All of these are considerations that should be made during the analysis phase of design, but the current study did not make considerations for the opinions of these stakeholders and was simply designed to examine how analysis is performed in the process.

Student usage of designed training resources was not investigated by this study. This may be of considerable interest for future studies related to patient experience and student clinical training; however, student usage of designed and developed materials was not the focus of

current research. Implementation is not of the analytical phase of systematic instructional design; execution of delivering instruction with the materials is not part of this study. Research questions did not address implementation of clinical training materials and resources.

This study only examined student clinical training, not didactic instruction. Typically, didactic courses that include process instruction, laboratory assay methodology, and procedural application of this information are completed prior to the student entering the clinical training phase of matriculation (NAACLS, 2020). There is a specific amount of training and assessment that takes place prior to a formal clinical practical training event for all students enrolled in healthcare training programs (NAACLS, 2020); however, the research questions in this current study did not address this aspect of the program curriculum.

Lastly, patient perspective on student performance was not examined by this study. Investigation into this information would equate to examining the efficacy of training materials designed to include patient satisfaction considerations and would be an important study if researchers were seeking validation of integrated heuristics within clinical training programs. Considerations of such studies would be beneficial as a method of evaluation of training program impact to the intended patient population served and healthcare institution HCAHPS scoring.

Healthcare Training in the Clinical Laboratory

The delivery of accurate and reliable acute and preventative healthcare is complex and highly contextualized. Ensuring healthcare providers and professionals have mastered specific procedural tasks is of paramount concern if the intent and purpose of the procedure is to aid in the healing of patients. Based upon the task, hours to years of effective training are needed to arrive at proficient task mastery and fully competent task performance. Because of this, healthcare training must incorporate complex learning design intended to be used within and

across multiple contexts. This means that a healthcare professional could be required to execute the same task in varying degrees and locations and among different patient types, such as neonate, adolescent, and geriatric patient populations, all with diverse perspectives on how they define a PPE.

Hospital laboratories are clinical hospital departments that provide diagnostic patient testing information to clinicians and direct patient caregivers. This diagnostic testing is performed on all patients - from birth through death. Professionals working in these labs have been historically considered indirect clinical healthcare professionals because they very rarely are in the direct presence of the patient or delivering direct patient care (ASCLS, 2020), although over 70% of clinical decisions are made using the work these professionals produce (Badrick, 2013). The work performed in these laboratories includes the analysis of patient samples for basic biochemical processes, screening for cancerous diseases, identification of pathogenic organisms, and pretransfusion testing conducted to assign and dispense a compatible blood component.

Tasks performed in the clinical laboratory are classified into two categories: moderately complex or highly complex (CLIA, 2020). Moderately complex tasks are those that take minimal skill levels to perform, require little training and proficiency to achieve accurate, reliable results, and are difficult to report incorrectly; an example of this form of testing is reading a color change from a urine dipstick test. Highly complex tasks require extensive training and clinical expertise to perform, interpret, and report to caregivers; these types of tasks are performed by clinical lab professionals who have completed formal education programs in Clinical Laboratory Science and have engaged in a prescribed mentoring and training period. This educational period includes detailed competency assessment prior to validation of employee proficiency and

subsequent approval to independently perform the associated tasks. Determination of patient blood type and selection of compatible blood for transfusion are examples of highly complex laboratory testing (CLIA, 2020).

The training of MLT professionals typically takes place in certificate programs offered at the community college level. During these training programs, students are required to complete clinical practicums where they begin to apply methodological testing theories to practical application in the workplace. These practicums are completed as student training, and students receive college credit for completion; it is one of the most important components of their formal training in the profession. Successful completion results in graduation from the program and progression to national certification as an MLT (ASCP, 2020). Work performed by these MLT professionals is the foundation of all reported test results released to physicians and used for the treatment of patients. Without properly performed laboratory tasks, it will be impossible to report accurate, reliable results that impact patient care.

Most frequently, clinical trainers of healthcare students are not employed by the college or university, they are employees of the hospital laboratory where the student is placed for training. These clinical trainers literally work alongside the student, allowing the student to complete patient laboratory testing under their direct supervision. Throughout this process, the clinical trainer gradually releases more autonomy to the student as the student demonstrates task completion competency. However, during this clinical training process of testing personnel, there is very little patient interaction that takes place, leaving the student to view the patient as more of a sample rather than an individual. Because of this, there may be the tendency for the student to feel disconnected from the patient and their direct care.

Once employed, laboratory professionals engage in more training specific to their clinical laboratory and to the jobs for which they were hired to perform. Based on job responsibilities and tasks, these training periods can take up to six months to complete and must be frequently assessed to ensure accurate performance. During this time, the employee is paired with various clinical laboratory trainers, employees who have been deemed competent to train new employees in designated tasks, and the new employee observes, models, and performs tasks in the presence of the trainer, receiving feedback and advice on task performance refinement. This training model is performed until the employee is deemed competent and is approved to perform the tasks without direct supervision.

A considerable amount of this training is focused on problem-solving and honing critical thinking skills that are foundational when working through diagnostic testing and specimen collection problems. From analysis of samples from premature neonates to obtaining a pretransfusion blood type on a deathly ill geriatric patient, these jobs tasks will include less than ideal testing situations that will require highly accurate and focused problem resolution to ensure patient care delivered by the lab is correct, reliable, and, above all, safe. Without a deep understanding of how to not only perform sample collection for highly complex testing but to also solve problems that can arise before, during, and after specimen collection, clinical laboratory professionals will not be successful in the completion of associated workplace tasks. Briefly stated, the work these healthcare professionals perform is very complex, can be problematic, and is very specific to the context in which patient care is delivered. To summarize, clinical labs directly impact care delivered to patients by performing tasks that indirectly connect them to the patient.

Because every patient is different and brings with them a varying presentation of their condition, emotional status, physical limitations, and overall expectations of healthcare services received, all encounters with patients should include consideration for optimal and suboptimal to devastating outcomes (Henriksen & Dayton, 2006). For example, patients presenting to an emergency department complaining of chest pain will be immediately admitted and screened for an active myocardial event that could worsen quickly, not indigestion that would be more easily resolved. Upon admission, there are numerous unknowns: level of cardiac enzymes, status of hemoglobin, presence of infection, and the list can go on. It is in this fact that healthcare professionals must possess a high degree of understanding of the current situation, as well as the patient's desired state of problem resolution. Simply stated, from the perspective of the clinical laboratory, it is not just about successfully obtaining good samples for testing and ultimately reporting accurate results to the clinician, it becomes vital to execute these tasks in the mindset of meeting the expectations of the one and only patient served at the time of task performance and without knowledge of all biological functions in play. Because not all components of the situation are readily available for review and understanding, clinical professionals must be able to work through the problem with only the information at hand, seeking clarification through clinical investigation strategies learned through the training and mentorship.

Theoretical Lenses and Conceptual Framework

Experiential learning and situated learning were the two theories that supported this research and were used to develop the conceptual framework that was used to create and analyze data collection instruments.

Experiential Learning

The majority of healthcare clinical student training transpires at or near the patient's bedside. Through observation, modeling, simulation, and reflective practice, students engage in knowledge acquisition by experiencing how learned skills, theories, procedures, and methodologies are transferred for use in their intended context. As students engage in this form of learning, their skill sets improve in both accuracy and reliability, being transformed to a proficient and competent practice and performance. Throughout this learning process, students receive trainer feedback and continually reflect upon their performance and ways to improve it. This all happens because of the experiences they have during their training.

Experiential learning theory is defined as knowledge created by learner transformation through direct experience (Dewey, 1938; Kolb, 1976; Kolb & Plovnivk, 1974; Murray, 2018). It is often referred to as learning by doing (Dewey, 1938; Murray, 2018) and is the primary means by which healthcare professionals are trained to deliver patient care. Through this model, purposeful and meaningful educational experiences are crafted to produce teaching opportunities for students to engage in concrete or abstractly conceptualized experiences and subsequently reflect upon those experiences as they move forward in training (Kolb, 1976). As the learner engages in the learning experiences, knowledge is transformed either through reflective practice or through practical experimentation (Kolb, 1976; Kolb & Plovnivk, 1974). In the case of clinical training for students of MLT, students literally practice their knowledge of the discipline in a hospital lab alongside a clinical trainer who is working with real patient samples. Students participate in the performance of diagnostic testing collection just as if they are employed by the hospital. Through their experiences during this internship, they are constantly reflecting, whether consciously or subconsciously, on their performance and ways to improve it.

The foundation of this study rested upon experiential learning theory. From here, the study was built on the fact that learning experience creates opportunities to transform a student's knowledge and practical application of skills.

Situated Learning

Building upon the student's experience during a clinical training internship, their localized context of use is founded in the performance of venipuncture at the patient bedside. Their education is situated in the hospital laboratory and in various locations throughout the hospital; therefore, situated learning theory can be applied to this study to further focus the purpose and goal of this study.

Situated learning theory states that learning within a specific context is highly social and not completely and independently controlled by the learner (Lave & Wenger, 1991). In the context of clinical training in healthcare, this is accurate, because clinical trainers deliver instruction to students in the literal location where the student will be ultimately using the knowledge. According to Brown et al. (1989), learning that is situated within a specific, authentic context and through authentic, relevant activity produces knowledge that the learner will be able to transfer to identical or similar contexts. This is an accurate description of how clinical training transpires within the hospital clinical laboratory, whereby the student observes, models, and practices skills and tasks that may be used within the same laboratory or in similar technical laboratory environments where their MLT skills will be used to obtain patient samples.

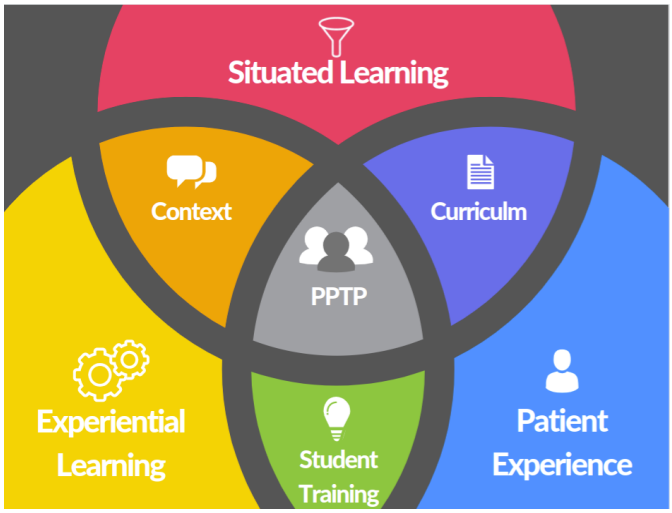
Situated learning, specifically within the clinical setting, is highly experiential and results in the learning of highly specific and specialized skill sets that are transferable within these contexts.

Conceptual Framework

This qualitative study was guided by the study's conceptual framework, which was built using experiential learning theory and situated learning theory. Because good systematic instructional design begins with a rich analytical phase, designed to isolate what information should be taught, where this information will be utilized, and how the information will be delivered will be integral components of the framework and synthesized to result in the execution of patient perspective task performance (PPTP).

Figure 1

Study Conceptual Framework



Student Training, Context, and Curriculum

When examining the conceptual framework, it is vital to understand the convergence points of the learning theories applied. Because this study examined the inclusion of patient experience within MLT student clinical training, it was important to conceptualize how the learning theories specifically guide examination of study research questions. MLT curriculum

dictates the context of student training, so it stands to reason these three areas should be of specific focus of the study.

Situated and experiential learning are supportive of each other. Learning by doing and direct experience are the essence of learning within a specific, situated context of use. Legitimate peripheral participation is the intentional engagement of the learner alongside a master teacher, teaching within the topic context of use (Lave & Wenger, 1991). In formal healthcare education, this intentional engagement is dictated by curriculum designed to establish set standards of acceptable performance, proving the student has mastered minimum skills to pass the course. Beyond these minimum skills, student training also involves a conceptually infinite number of experiences that cannot be completely prescribed by the curriculum. It is because of this that examining how the student's clinical training experience is supported by the context of that training provided insight into patient-perspective task performance inclusion.

Situated Learning and Patient Experience Design

Reviewing the graphical representations of the conceptual framework (Figure 1), the goal of this study was to understand how student clinical training is designed to train learners to engage in patient-perspective task performance. Because healthcare professionals situate their respective workplace tasks in delivering aligned patient care, patient experience design will be incorporated within this study's conceptual framework. Inclusion of considerations for patient experience will further define how aligned interventions will ensure student clinical training is not only aligned to task-specific instruction but to also make considerations for how that task performance will impact the patient experience. Examination of both the curriculum used during clinical training and the context in which the curriculum is applied aided in the determining

degree of alignment of training purpose for the promotion of patient-perspective task performance.

Situated Learning and Cognitive Apprenticeship

Learning is situational, meaning that the context in which the information will be applied is highly specific to the purpose, aim, and intended learning outcome of instruction (Lave & Wenger, 1991; Lave & Wenger, 1999; Lave & Wenger, 2001; Stefaniak, 2015; Wenger, 2010). All learning in life is situational; you cannot learn how to operate a piece of machinery if you are never in a situation where its operation is needed or will be used. This is also true of training in healthcare. An almost infinite number of situations exist in medical education, situated in various settings: direct patient care, indirect patient care, patient support service, and administration are broad examples of genres where medical education is situated. Inclusion of cognitive apprenticeship within this framework, in the form of situated learning, served to create a more precise focal point on how patient-perspective task performance in healthcare training is designed for the student of Clinical Laboratory Science.

Experiential Learning and Cognitive Apprenticeship

Cognitive apprenticeship comprises several phases of practice; two of these are specifically reflection and exploration conducted by the learner to improve performance and achieve task mastery (Dennen & Burner, 2008). In the context of healthcare training, employees reflect and explore their understanding and practice in the presence of patients, and more specifically, with patients throughout the entirety of their experience. It is because of this that employee reflective, metacognitive practices serve as a means for self-regulated formative feedback and should be carefully practiced in response to patient outcomes and patient feedback. Learning alongside a teacher and in the presence of the patient receiving care, the healthcare

professional can observe, model and practice complex skills while immediately reflecting on task performance. This immediate formative feedback provides more rapid and relevant refinement during task performance, which can equate to a greater degree of task mastery (Dennen & Burner, 2008).

Context of the PPTP

Instructional Design and Patient Experience

Reiser (2001) states "the field of instructional design and technology encompasses the analysis of learning and performance problems, and the design, development, implementation, evaluation, and management of instructional and non-instructional processes," (p. 57). Within this concise statement lies the heart of healthcare training creation, designed to produce proficient and competent healthcare workers: analysis and determination of need with subsequent creation of resources aimed at meeting that need. Ultimately the objective of any instructional design process is to elicit learning in the intended audience, maintain and sustain knowledge acquisition and meet intended learning objectives related to performance goals (Reiser, 2000). To meet this objective, instructional design and human performance professionals must invest time, knowledge, and investigational strategies to uncover not only the resources needed to develop the learning product but to understand who will be utilizing the learned information, as well as secondary stakeholders who will be impacted by its use. In healthcare, the secondary stakeholder is the patient and therefore must be included in the systematic design of the healthcare professional's instructional resources. Within the context of this study, patient experience resides in the degree of satisfaction exhibited by the patient before, during, and after performance of a venipuncture or other MLT procedure performed to obtain a biologic sample used for laboratory testing.

Analysis and Systematic Instructional Design

Before designing a learning product, job aid, or other supportive learning resources, an extensive and exhaustive analysis phase should be completed in order to isolate all associated problems or opportunities for improvement related to the purpose and aim of the project. Comprehensive analysis is the first step and should be carefully planned and executed if it is intended to effectively isolate needs associated with the purpose of training and education (Harless, 1973; Jonassen et al., 1998). There are many aspects that comprise this phase of the design process, two critical aspects are contextual analysis and learner analysis, both of which play leading roles in each subsequent phase of the instructional design process and facilitate the determination of all heuristics applied to the project.

The analysis phase of design requires a high level, specific overview of the project in order to determine the current and desired state of the process. Within the analysis, this determination is obtained for the current and desired states of everything from workplace performance to study feasibility, to determination if training is even a solution to the problem (Harless, 1975; Morrison et al., 2019; Pershing et al., 2006). Before determining if instructional or non-instructional learning resources are needed to meet the desired state, the problems must be accurately uncovered, and all potential solutions of these problems should be considered. If training and education are deemed as being interventions that will achieve the desired state, a further needs assessment should be conducted prior to the creation of instructional interventions (Morrison et al., 2019; Pershing et al., 2006). Part of this needs assessment includes a learner analysis and contextual analysis to acutely define the intended audience and create alignment of both to the problem solution (Gordon, 1991; Harless, 1975). In the design of clinical training curricula, the process is very similar, whereby the current state is that the student lacks the

knowledge base and skill set and the desired state is knowledge acquisition and task mastery. Knowing who the learner is and where the learned information will be applied are critical components to be clearly understood prior to the design of any training resource. In this study, the learner is a student of MLT and healthcare and the context where this mastered information will be applied is a hospital or healthcare institution.

Learner and Contextual Analyses

It has been well argued that if you do not know your learners you cannot accurately teach your learners (Bentley et al., 2005; Conrad, 2000; Reigeluth & Carr-Chellman, 2009; Stefaniak & Baaki, 2013). Understanding the individuals who will be using instructional and non-instructional interventions is of primary concern in any design project. One of the most primary concerns of gaining this knowledge is to motivate your audience throughout the entirety of the intervention; to achieve this, two critical items are required: attention to the learners' needs and relevance to the context in which the learner will apply the information (Keller, 1983; Keller, 1987; Keller, 2008). This is especially important when creating instruction that teaches complex skills, such as MLT, because the skills being learned will be highly relevant to the purpose of task performance. Therefore, engaging and motivating the student throughout the training process are critical components to ensure the student reaches satisfaction with competently and confidently executing the task (Keller, 1983; Keller, 1987; Keller, 2008). Understanding and knowing who the learners are will aid in the determination of aligned strategies that should be developed to promote engagement and continued learner motivation. Therefore, a learner analysis is vital to any instructional design project (Keller, 1983; Keller, 1987; Keller, 2008). In this study, the learner is any given individual who has enrolled in a certificate program through their local, public community college. Learners can vary in age from 18 to 60 or older. Most of

the enrolled students do not have a background in healthcare and hold either a high scholastic diploma or GED.

Patient Experience Design and Contextual Analysis

The context of use in healthcare always resides with the patient. It is because of this that the patient experience is a crucial component of any professional development or training curriculum initiative and should be a significant consideration when performing a contextual analysis. Empathically, viewing the experience through the eyes of the patient can serve to enhance the way care is delivered, resulting in a better patient experience and higher degree of patient satisfaction in healthcare services rendered (Meloncon, 2017).

Attending to the patient's needs and expectations, relevant to the intended purpose of the patient encounter, is critical if the intent of healthcare services delivered is to provide a satisfying experience. Design considerations that include the patient perspective can serve to heighten attention and relevance needed to motivate a positive patient experience; this design perspective route has been taken with situations such as organization of patient hospital rooms, aesthetics of visitor waiting areas, efficiency of patient support services and patient encounter experiences (Meloncon, 2016). However, as observed by the researcher in both academia and in the workforce, this approach may not consistently be employed for the design and development of healthcare workforce training or student clinical training curriculum. This study seeks to understand how patient experience can be used to develop a more empathic learning experience and transfer of knowledge to the localized context of use.

Cognitive Apprenticeship and the Patient Experience

All learning is situational (Lave & Wenger, 1991; Wenger, 1999). This means that knowledge acquisition is specific to the context in which it is experienced, learned and utilized.

For example, in laboratory medicine, the collection of a diagnostic test in preparation for an elective surgical procedure will be much different than collection of state-mandated blood screening samples from a premature neonate. If a laboratory professional only practices sample collection on neonatal patients, that individual never experiences the events that arise when an adult exhibits varying responses to the procedure, such as anxiety to needles, adverse reactions to the collection process, or the overall helplessness of being in the total care of a healthcare professional. In this context, the laboratory professional draws upon knowledge mastered through extensive observation, modeling, and practice, creating a highly specific performance environment tailored to the current needs of the patient. In healthcare, all task performance is highly contextualized, both to the purpose of the task performed and to the patient who is receiving care.

As previously discussed, mastery of healthcare task performance does not come from a rich knowledge base of theory and best practice alone; it comes from the synthesis of this information in conjunction with the practical, specific task performance in the presence of a patient through the mentorship guidance of a skilled teacher. This teaching relationship, where a master teacher models skills and task performance alongside a student is known as a cognitive apprenticeship (Collins, 1991).

An instructional strategy commonly used in healthcare, cognitive apprenticeship approaches training of complex skills through purposeful stages of task performance: meaningful learning, reflective practice, and application and transfer of refined skills. Working alongside a mentor, the employee in training makes observations of modeled behaviors, practices task performance with the mentor, receiving coaching and scaffolded instruction as needed, and reflects upon performance for future iteration of the skill (Collins, 1991; Collins et al., 1988). It

is in this reflection and subsequent iteration that task performance hones the professional's skill set. Cognitive apprenticeships can vary in length of time and degree of complexity and are rooted in the intended purpose training. Therefore, a neurosurgeon's residency will last much longer than a general practitioner's; the complexity of task performance is much greater for the neurosurgeon and thus requires a longer span of time to master and perfect.

Patients play a crucial role in the execution of a cognitive apprenticeship; they are the lab in which the learner refines his/her skills. Because of this, the patient's experience plays a pivotal role in the manner with which employee cognitive apprenticeships are designed and developed. If they are created without consideration of the patient's perspective and expectation, the likelihood of trained employees lacking the ability to place the patient experience as one of their primary priorities may be high. It is because of these facts that this study must example patient experience and clinical training from the perspective of experiential learning that transpires within specific healthcare-based situations.

Summary

This descriptive case study was designed to explain how student clinical training in community college MLT certificate programs is designed to include purposeful and meaningful considerations for the patient experience. Currently, there exists a gap in the analysis phase of systematic instructional design whereby there is little insight into the perspective of the patient and patient satisfaction expectations with laboratory services rendered, more specifically with MLT practice. Using experiential learning and situated learning theories, one specific aspect of the analysis process of systematic instructional design was examined, patient experience design within a cognitive apprenticeship. Overall aim of this study was to provide instructional design insight into the design of student clinical training experiences that will include instruction on

patient-perspective task performance, which is operationally defined as performance of a task with the mindset of patient empathy and perspective. To further define this context, empathy, in this study, is defined as the healthcare professional possessing pure altruistic motivation to resolve needs of the patient, viewing those needs through the perspective of the patient apart from any personal opinion or bias.

CHAPTER 2

LITERATURE REVIEW

Although there are many considerations to be made in the creation of technical and vocational educational resources, three of the most critical may be accuracy of information, reliability of instruction, and efficiency of the learning product (Dick et al.,2005; Morrison et al., 2019). Without accurate, reliable content, the intended learning audience will be unable to execute associated tasks related to the purpose of instruction. As important is the efficiency of the instruction and heuristics applied to the learning content; all three of these aspects must be early and frequent considerations in the design of workforce training. This literature review will provide a landscape of work that can serve to support PPTP and the aim of this research study by aligning relevant empirical studies with information produced by the methodology of this study.

PPTP is a work-based strategy that promotes healthcare professionals to perform all tasks through the perspective of the patient. Providing the same level of care expected if the healthcare worker found themselves in the same situation is essentially the definition of PPTP, and its use is intended to establish and sustain a positive patient experience through highly empathic care delivered to the patient and individuals associated with direct patient care. This study ultimately serves to examine how healthcare students are trained to execute this form of task performance, and this literature review is conducted from this foundation. At present, there are no empirical studies that examine the impact of how students of Medical Laboratory Technology programs are educated and trained to include considerations for patient experience.

Instructional designers frame research studies in theoretical or conceptual frameworks that are intended on grounding and anchoring their design initiative (Creswell & Creswell, 2017). Situating studies within the confines of theory, researchers can use these frameworks as a

focal lens, continually refining their study purpose while maintaining alignment to the overall aim of the research. In essence, this is a form of situated learning for the researcher. Patient experience and task performance are the two primary topics situated within the context of this study's literature review.

Situated learning, or situated cognition, is a manner of constructing meaning from current situations and experiences (Lave & Wenger, 1991; Wenger, 1999). To fully grasp situational learning, comprehension of legitimate peripheral participation within an associated context of use is critical. Engaging in legitimate peripheral participation means the individual is engaging in a high degree of social learning, highly contextualized to the overall purpose of task performance and most often at the point of application. Examples of legitimate peripheral participation include apprenticeships such as medical residency, clinical practicums, and preceptor training designed to onboard new employees to workplace tasks. These cognitive apprenticeships place the learner within the actual context of use and beside a subject matter expert who is guiding the learner along to task mastery (Lave & Wenger, 1991; Lave & Wenger, 1999; Lave & Wenger, 2001; Stefaniak, 2015; Wenger, 2010). Within the field of healthcare, these cognitive apprenticeships place the learner in a unique situation by providing highly relevant and focused instruction on task performance while simultaneously situating that work within the confines of relevant patient care.

Highly contextualized and situated content can promote content accuracy, instruction reliability, and learning efficiency by focusing all instructional activities on the learner's point of application and use and for an intended purpose and outcome (Stefaniak, 2015; Stefaniak, 2019). A healthcare student training practicum or mentorship, known as a cognitive apprenticeship, supports accuracy, reliability, and efficiency in workplace task training and efficiency in

workplace task training by pairing the student with a trainer and master of the content (Lave & Wenger, 1991; Stefaniak, 2019). Situated in a specific workplace context, a cognitive apprenticeship is a heuristic that poses multiple phases of instruction executed in a prescriptive manner: task modeling, student coaching, instructional and performance scaffolding, learner articulation, reflection, and exploration of learned topics (Collins, Brown, & Newman, 1988; Collins, 1991). This is a commonly encountered training method in healthcare; complex, problematic tasks, such as patient care related tasks, require highly specific contexts instructed in a controlled, masterful manner by professionals who demonstrate a high degree of competency and proficiency.

For a cognitive apprenticeship to be effective, design of the instructional model must take place around a context of use (Stefaniak, 2019). Contextually relevant student clinical training is created using, and in reference to, validated and approved department policies and procedures and with real, authentic problems; however, to localize this context means to consider the point of literal use and, more specifically, the focused use of learned information. Localized context of use essentially means to take learned information and distill it for a focused application at the point of use (Baaki & Tracey, 2019). Consideration for the localized context of use, in the design of student clinical training in healthcare contexts, can result in highly accurate, reliable training delivered in an effective manner, directly related to the intended location of use, the individual patient's bedside and for specific physiological patient conditions.

The localized context of use in healthcare involves not only the healthcare professional but also the patients they serve, who are affected by the outcomes of training. Because of this, consideration for how the information will be used in the literal moment of need could serve to improve the way content is designed for training (Baaki & Tracey, 2019). If the goal of

healthcare workforce training and development is to produce accurate, reliable, and efficient delivery of patient care and intended outcomes, inclusion of patient experience should be a component of the instructional design process. This will create a more specific and applicable training product for the intended context of use.

Experiential Learning in Healthcare: Problems of Experience

In 1915, John Dewey wrote that "development emphasizes the need of intimate and extensive personal acquaintances with a small number of typical situations with a view to mastering the way of dealing with the problems of experience, not the piling up of information" (Dewey, 1915, p.13). This very concise statement essentially sums up how healthcare training transpires in manner to bring the learner to task mastery and build critical thinking skills that will work to resolve problems associated with the task. Bounded by "intimate and extensive personal acquaintances", student clinical training in healthcare disciplines takes place within the literal context of use of which the student will perform the learned task and with individuals who have already mastered the task. As the student repeatedly experiences the "typical" task performed and associated problems that may arise throughout performance, task mastery increases through an experiential learning model. Thinking about how refined, accurate task mastery in healthcare directly impacts the patient, one can ascertain that through a series of highly refined typical tasks, the learner only creates an accurate habit of procedural performance but can arrive at a consistent, automatic and accurate task execution. This laser accuracy and constant reliability promotes a positive patient impact to holistic care received.

Experiential learning provides the learner with a concrete, authentic experience while incorporating reflective practice and subsequent iteration that results in progression to learning task mastery (Kolb & Plovnivk, 1974). At the heart of learning through experience is choice;

choices these learners make results in outcomes and consequences directly connected to the choice. This is what happens in healthcare. Because each patient's experience and needs vary, choices medical professionals make can have differing outcomes. Therefore, iterative practice that results in an abstract conceptualization of outcome serves to promote procedural learning and task mastery refinement (Aukes et al., 2008; Gilbert et al., 2014; Kolb & Plovnivk, 1974; Kolb & Kolb, 2009; Lewis & Williams, 1994).

Examining how experience transforms student clinical training practicums, Gilbert et al. (2014) conducted a quantitative study on the learning outcomes of health science students at two large urban research universities in the United States. Their findings suggest that high levels of active learning transpire during clinical internships and apprenticeships designed to promote postgraduate career decisions. Additionally, findings show that these apprenticeship programs increase student knowledge base and aid the student in confidently making informed decisions for future career development (Gilbert et al., 2014). Through these structured programs, concrete experiences serve as transformative learning experiences relevant to the intended curriculum of which the student is enrolled.

The experience of learning through concrete examples and situations with the goal of refined task mastery is futile unless reflective practice is integrated within the experience. Personal reflection of medical and allied health science students is a vital component of learning through experience because it creates an abstract conceptualization of the task and provides a mechanism for guidance of iterative practice (Aukes et al., 2018; Morse, 2012). Reflective, iterative practice is a key component of experiential learning and is often founded in the making of mistakes which have the potential to generate rich feedback from clinical trainers and teaching faculty (Morse, 2012).

The “piling up of information” as Dewey wrote (1915), is the antithesis of learning through experience, yet learning through experience will lead to a large wealth of knowledge related to the topic of learning (Dewey, 1915). Conceptual and contextual knowledge of a medical process or task is essential to understanding the ideal conditions and outcomes related to accurate task performance; however, only experiential learning can produce healthcare professionals who think critically through problems, reflect and debrief for refinement, and iterate task performance to hone task mastery and professional skill sets. Because healthcare training is highly experiential, it is also highly social and situational (Aukes et al., 2018; Morse, 2012; Yardley, Teunissen, & Dornan, 2012). Teachers of healthcare students engaging in experiential learning practicums are responsible not only for guiding students based upon best practices and intended outcomes, but they are more acutely responsible for rapid, thorough debriefing of an experience, guiding the student through reflection and subsequent critical thinking (Yardley et al., 2012). This debriefing is highly specific to the context of the experience, making the learning activities and associated feedback situated in the localized context of where the information will be transferred and used.

Situated Learning in Healthcare: Small Number of Typical Situations

“A small number of typical situations” (Dewey, 1915, p. 13) is exactly what students of any healthcare field encounter. From the taking of vital signs to documentation of systolic and diastolic blood pressure to the administration of a clot busting thrombolytic, healthcare professionals are trained based upon the situations typically encountered within their respective professions. Experience during these situations gives rise to the development of a rich knowledge base rooted in mistake-making, reflective, iterative practice, and task mastery. The context in

which training is conducted is critical to student arrival at proficient, competent task mastery (Berkhout et al., 2017; Kaufman & Mann, 2014; Onda, 2012).

Part of situated learning within a highly localized context is the development of a community of practice (CoP). Communities of practice are formally or informally organized learning environments where all members are seeking to grow knowledge within a common context and generally for a common purpose or outcome (Lave & Wenger, 1991). Member participation is one of the hallmarks of a CoP, where participation leads to the sharing of knowledge and establishes a vital link to learning (Lave & Wenger, 1991; Wenger, 1999). Healthcare training within the clinical laboratory establishes a highly specific CoP, designed to provide students with an easily accessible route to the information needed in order to build a knowledge base to be used for clinical lab task performance.

Because medical education is highly complex, situated learning communities within healthcare educational programs can help both students and clinical training faculty design better, contextually relevant, training experiences and mitigate the risk of students acquiring misinformation that may serve to adversely affect patient care (Cruess et al., 2018; Berkhout et al., 2018; Kaufman & Mann, 2014). An acute understanding of task complexity, learner needs, intended outcome of procedure, and patient expectation all come together to create the situation where learning takes place and transforms the knowledge a learner acquires.

Front-end Analysis and the Design of Student Clinical Training

Situationally, front-end analysis is a comprehensive and detailed assessment of a potential performance gap, whereby various aspects of the situation, or environment, are assessed and examined to gather a maximum, yet sufficient, amount of information prior to the design of a performance intervention (Harless, 1975). This analysis takes into consideration

multiple components of the situation and context of application such as definition of the problem, current and desired states, what resources are available to utilization, what resources are or are not accessible, who the learners are, what the learners already know, and what the best intervention(s) would be to reach the desired state of the situation (Harless, 1975; Jonassen et al., 1990; Jonassen et al., 1991; Watkins, 2007; Pershing et al., 2006).

A holistic front-end analysis is vital to ensuring that the designed instructional or non-instructional intervention meets all the needs and expectations of each facet of the learning environment. Front-end analysis is an overarching term that covers various types of analyses and assessment functions designed to systemically examine the context in which a design intervention will be utilized (Rodriguez, 1988). This systemic examination encompasses activities such as needs assessment and analysis, contextual analysis, task analysis, and learner analysis, all of which can play a crucial role in the development of aligned resources designed to bridge performance gaps and improve human performance of the system (Okey, 1990; Perez et al., 1995; Richey & Tessmer, 1995; Rodriguez, 1988).

For the creation of healthcare training, one of the most critical front-end analysis models is task analysis (Clark, 2014). In a task analysis, various investigative strategies are used to isolate knowledge and skill sets learners will need to know and do prior to performing complex tasks (Clark, 2014; Morrison et al., 2019). An example of performing a task analysis with the intent of designing clinical training in MLT would be determining what procedural tasks must be performed, as well as in the correct order, to ensure that a successful venipuncture is performed and results in an acceptable blood sample for test analysis by the clinical laboratory. There are many steps in the process of a venipuncture that are considered complex and required for the accurate performance of the task (Strasinger, 2019); therefore, a detailed task analysis,

identifying what the knowledge base must be for accurate performance, is a critical step in the design of venipuncture instruction and supportive resources. Much, if not most, of the tasks within the clinical laboratory are complex and require a deep understanding of the supportive body of knowledge required for accurate and reliable task performance. Therefore, systemic front-end analysis is crucial for faculty or instructional designs who develop clinical training programs for healthcare students.al

Patient Experience and the Design of Student Clinical Training

Patient experience design is defined as patient-focused design practices and considerations that mimic how patients will use or be involved with the outcome of resources and materials developed for the use of patient care delivery (Meloncon, 2016). This means that during the design phase of any initiative that will or will have the potential to impact patient care and ultimately patient satisfaction, considerations must be made related to how the patient perceives delivery of care or engagement in a patient care related experience. Because most laboratory professionals never engage in direct patient care, consideration for patient experience has historically not been of paramount concern regarding the design of clinical training programs. Generally, the design of clinical training is heavily influenced by context of knowledge transfer and application (Meloncon, 2016); therefore, it stands to reason that if a clinical laboratory professional rarely encounters a patient, lab-specific clinical training most probably lacks deep consideration for how the laboratory task performance impacts patient expectations and satisfaction (Peter et al., 2010). However, all testing performed in a clinical laboratory begins at the patient bedside in the performance of MLT, which means that the impact of task performance on the patient experience must be taken into consideration.

Examining patient experience design (PXD) as it is currently utilized in healthcare, from

the design and development of patient educational materials (PEMs), which are developed to address patient needs related to delivered care, expectations of care, warning signs related to disease state or condition, and contact and communication pathways for patient questions and needs (Meloncon, 2016), there is little inclusion of clinical laboratory aspects within current use. However, expansion of the integration of PXD can have positive impacts to task performance in the clinical laboratory if purposefully integrated within clinical training resources, specifically in sample collection and processing.

Using design thinking, empathic consideration of patient-perspective, and inclusive design and development processes, such as isolation and utilization of all key stakeholders, patient experience inclusion has the potential to improve the quality of care delivered, improve communication between providers and patients, and increase overall satisfaction of both the patient and the healthcare professional delivering care (Meloncon, 2016; Xu, 2016). This inclusive design thinking is not isolated to hospital departments that deliver direct patient care but can be integrated into any healthcare discipline or specialty that delivers care that directly impacts patient satisfaction. Clinical training of students is a prime arena for PXD to be utilized within training resources and materials. Beginning with healthcare education training programs starts students out with an empathic perspective on how the work they produce impacts each stakeholder involved in its use. A comprehensive education approach, rooted in program curriculum, can generate patient design thinking within the learner and ultimately aid in task performance that is conducted from the patient perspective.

Case-based Learning in Healthcare Training

Because specific, foundational tasks must be taught in all healthcare programs, clinical trainers often employ the case study or series of case-based scenarios that provide the student

with an exemplary to problematic example of the task. Students interact with the patient scenario and use the learning activity as a method of reinforcing previously learned information and transferring this knowledge into a specific context of use as related to the case study example. These scenarios can be perfectly craft as a well-structured problem, possessing all information needed for resolution, to ill-structured and even unstructured, lacking critical information needed to easily arrive at a decision. For the unstructured case study, there is no planning for design or delivery; it is simply created in real time and with recently encounter experiences that dictate the situation (Jonassen, 1997).

Both structured and unstructured case-based scenarios can be implemented within curriculum to provide highly effective instruction surrounding problem solving (Jonassen, 1997). It is because of this that healthcare training programs frequently integrate case-based reasoning and learning strategies and activities into both didactic and clinical training environments (Gwee, 2009).

Cognitive Apprenticeship and the Clinical Laboratory

"Cognitive apprenticeship theory emphasizes the process of making expert thinking 'visible' to students and fostering the cognitive and meta-cognitive processes required for expertise" (Lyons et al., 2017, p.723). Experiential, situational, context and content-specific and deeply social, cognitive apprenticeships are teaching and learning experiences that engage students in authentic and relevant training, directly associated with its intended purposes (Brandt, Farmer Jr, & Buckmaster, 1993; Collins et al., 1988; Dennan & Burner, 200;). In a cognitive apprenticeship, students literally witness and engage in the process of work (Collins et al., 1991), which equates to the greatest degree of training relevance and authenticity possible. This method of training allows the student to literally produce work in conjunction with acquiring knowledge

of the task; it is highly situational and engages the student in a highly relevant learning experience.

In the cognitive apprenticeship model, scaffolding instructional strategies is one of the key components in a successful education experience that produces knowledge acquisition and subsequent transfer of knowledge with the applied context. Five scaffolded components of cognitive apprenticeship include modeling, coaching, reflection, articulation, and exploration (Dennen & Burner, 2008). Each of these components takes place within a training environment and should be purposefully considered when designing clinical training experiences aimed at teaching tasks intended to be used for patient care (Brandt et al., 1993; Collins et al., 1988; Collins et al., 1991; Dennen & Burner, 2008).

The cognitive apprenticeship model has been extensively employed as an effective teaching and learning strategy in healthcare and clinical practice settings. Due to its use in contextually relevant learning environments and its authentic and practical application, this clinical training model serves aid in the development of clinically competent healthcare professionals who can accurately and reliably execute context-specific tasks while continually reflecting upon their performance (Collins et al., 1988; Dennen & Burner, 2008).

Patient-perspective Task Performance

In the healthcare community and profession, it is commonly understood that patient satisfaction is the driving force that sustains healthcare organizations (Faezipour & Ferreira, 2013). Therefore, it would be a logical assumption that everything in healthcare should be designed with the ultimate purpose and intended outcome of satisfying the patient; however, according to patient feedback, this is often not the case (Sofaer & Firminger, 2005). Understanding this relationship is imperative if healthcare institutions are planning to implement

workforce development aimed at promoting a positive patient experience.

Within this current study, qualitative examination of student clinical training artifacts and investigation into faculty design of these artifacts will take the vantage point from the patient's perspective. In viewing laboratory task performance from the patient's viewpoint, the design strategy takes on an empathic perspective and asks the question of how clinical laboratory task performance impacts the patient's overall healthcare experience. Through the use of PXD and front-end analysis, the design of cognitive apprenticeships will be examined for inclusion of patient consideration and have that consideration affect the manner with which front-end analysis is performed, assessed, and ultimately used for an empathically developed clinical training product.

Summary

Patient-perspective task performance (PPTP) is supported by the learning theories of experience and situated learning. For the instructional design and human performance professional, utilization of a rich and contextually specific front-end analysis can provide a heightened degree of detail regarding how clinical training products are designed and subsequently developed for students matriculating through healthcare training degree programs. Coupled with an understanding of the patient expectation, which can equate to the patient's experience, instructional designers can design cognitive apprenticeships in healthcare that are not inclusive of task performance as well as how that task performance comprehensively impacts the patient's experience with the healthcare institution. This process is driven and guided by understanding the localized healthcare context of use and the patient's perspective of healthcare delivery experiences. Designing with both will produce highly empathic instructional resources that will deepen the knowledge base of clinical laboratory professionals.

CHAPTER 3

METHODOLOGY

This methodology was designed to answer two research questions presented in this study:

- How is MLT student clinical training curricula designed to integrate considerations for patient experience and patient satisfaction within context-specific instruction and formal program curriculum?
- What instructional strategies are used to ensure the MLT clinical student is educated about patient experience and patient satisfaction and demonstrates that knowledge in practice?

Both of these questions drove the purpose of study design and the development of data collection instruments utilized with study participants.

Research Design

A qualitative methodology was chosen due to the infinite amount of data shared by the participants. There was no need to quantify the data since the objective of the study was to explain how MLT student clinical training strategies are used to create training that includes empathic experiences for patients, a case study inquiry strategy was used to design this research. More specifically, this study followed the holistic, single case study design (Yin, 2018), which focuses on a singular context and a singular data collection strategy. Rationale for the use of a single holistic case study can be explained in the singular examination of one MLT clinical rotation, conducted at one community college, with one student and for the only reason of exploration into instruction on patient experience. This method aligns well with the current study because the application of information is highly contextual and only one student was followed over a 12-week period. Case studies seek to explain events from an in-depth and relevant,

authentic context (Yin, 2018), which is the primary justification for the selection of this strategy of inquiry. The study did not seek to uncover opinions of participants as related to their personal experiences with the training material, only how those participants integrated patient experience into their developed learning products (Creswell & Creswell, 2017; Yin, 2018).

Since the study focuses on the design of MLT curriculum for student training on patient experience, patients were not included as participants in this study. Their personal perspectives and opinion were not a contributing factor impacting design component inclusion or exclusion. Furthermore, their shared experiences would not affect the decision to teach or not teach patient experience topics as they relate to MLT student clinical training.

This study was conducted in a natural setting, specifically in the student clinical training environment of a health sciences vocational program in a North Carolina community college. Through interactive and humanistic interviews, this research described how clinical training strategies and processes were designed for students engaging in MLT clinical training practicums within the setting of a hospital clinical laboratory. Emergent themes were revealed using personal interviews, document review, and focus groups conducted within the clinical training environment (Creswell & Creswell, 2017; Yin, 2018).

Procedures

A holistic, single case study design was developed to conduct this research. According to Yin, 2018 “case study inquiry copes with the technically distinctive situation in which there will be many more variables of interest than data points” (p. 13). Because the performance of a case study method is exploratory and open to the unlimited amounts of information provided by study participants, the design relied on evidence from multiple sources as well as continual reflection upon the tools used to gather data. The use of multiple sources of data collection served to ensure

the study trustworthiness was sound and that the emergent themes fully support the study outcomes, recommendations, and applications of the information. Case study design included three data collection sources, analytically triangulated to ensure data trustworthiness. Additionally, and to further promote the study's reliability, participants were asked to review transcripts of their provided information to ensure trustworthiness in data collection. If discrepancies were identified during the participant review process, further exploration into reasons for discrepancies took place and resolution made prior to proceeding.

The study was developed using three phases, each purposefully crafted for the single case study design. Three phases comprehensively examined (1) how the design was prepared (Prepare); (2) how data was collected and assessed during collection (Collect and Assess); and (3) how collected data was finally analyzed and reported (Analyze and Report) (Yin, 2018). Triangulation of data served to establish trustworthiness of the study by iteratively validating information collected by each device during the study. Continual research reflection of how subsequent data collection devices aligned with the needs of the study was made, with the understanding that minor adjustments of these subsequent instruments would be performed based upon information learned during data collection procedures (Yin, 2018).

Because this was a novel study and intended to simply explore and explain MLT student clinical training design in conjunction with patient experience, a deeper dive into participant opinion regarding that design was not needed. There was no need to understand if the design was efficient or effective in eyes of the student, faculty, or trainers, the understanding was simply surrounding what components and instructional strategies were part of the design of training.

Study Preparation and Data Collection Procedures and Instruments

Data was collected using four data collection methods: focus groups, participant interviews, document review, and field notes. The intent in using four collection methods was to triangulate the data and provide a holistic view of the instructional design process (Yin, 2018). Triangulation of data aided in providing a greater degree of depth to the data, equating to the ability for themes to emerge and establish study trustworthiness, as aimed at the intended population of the study outcome (Creswell & Creswell, 2017; Yin, 2018). Trustworthiness is vitally important, because the ability to apply the learned information to the population of intended use is ultimately the reason for study completion and reporting of emergent themes (Yin, 2018).

Focus Group

Two focus groups were planned but only one was held during the data collection phase of the study; the one that was conducted happened later in the data collection period. Due to staffing constraints and department workload considerations, laboratory management would not permit more than one staff member to participate in the focus group during working hours, and laboratory staff were not interested in participating during their personal time. Participants of the focus groups included an MLT Program Director, the clinical site Laboratory Director, and trainers working within the clinical training site. The focus group was limited to no less than three and no more than 9 participants to ensure a manageable and equitable facilitation of discussion (Creswell & Creswell, 2017). Four people participated in the study.

The focus group took place at the conclusion of the 12-week clinical training period. Verification that expectations were met, and plans conducted as desired emerged from this focus group, which indicated that prescribed goals and objectives were satisfactorily achieved during

the clinical training process. Emphasis was placed on the inclusion of patient experience throughout the training process. Appendix A provides a guided template for focus group facilitation.

Interviews

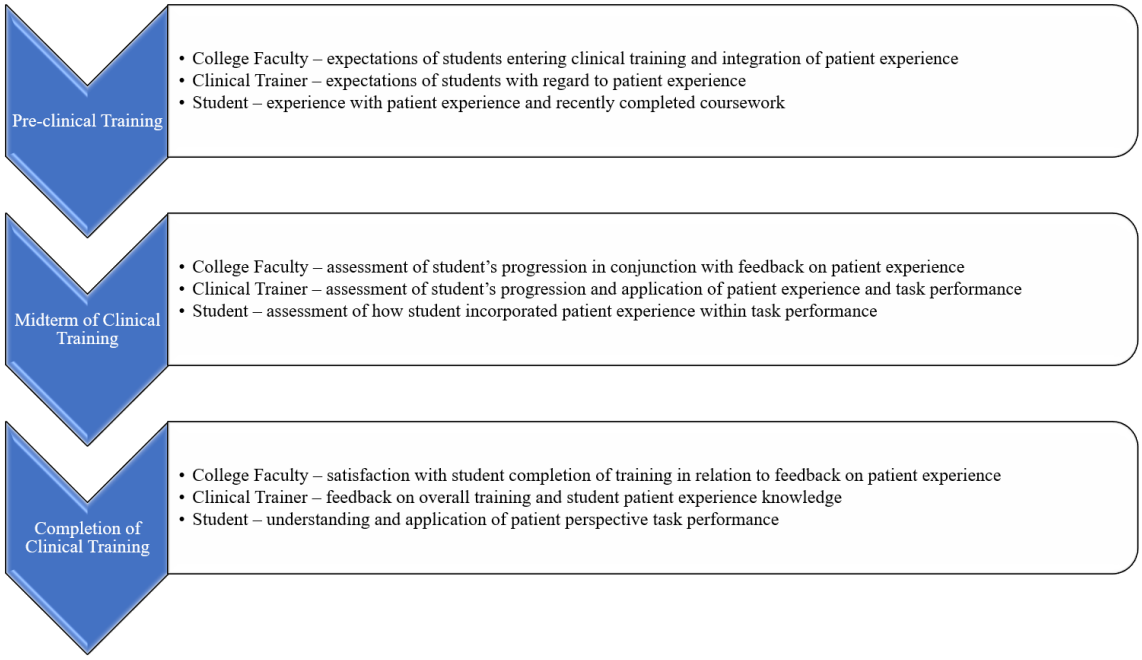
Interviews were conducted using the researcher's ODU provided Zoom web conferencing account or via telephone and with a set of questions and approved statements. All interviews were transcribed by the researcher within 24 hours of interview completion, and each interviewee was asked to review the transcript to ensure the information captured was accurate. If aberrant information was identified by the participant, transcripts were revised to reflect the correction and the participant was asked to review the revision for completeness. Appendix B provides the instructions and questions used for this data collection. Because there are no current data collection instruments previously used to investigate patient experience design for the development of MLT student clinical training curricula, these questions were solely constructed with the support of this study's conceptual framework. These interview questions were piloted with a small group of clinical MLT trainers and MLT educators prior to approving the instrument for study use. Minor grammatical and syntax edits were made to clarify question context and intended purpose.

Interviews were conducted at three specified times within the 12-week study and with three different types of study participants. One MLT student, community college faculty members, and clinical trainers participated in the interviews according to the interview timeline and plan displayed in Figure 2. The rationale for interviewing participants at three different times within the 12-week period was to capture any relevant changes in information regarding patient experience and clinical training that may have transpired during the student's progression

through the training process. Although all participants shared their personal experiences and outcomes of those experiences, the study's intent was to simply explain how patient experience is incorporated within MLT student clinical training. The intent was not to understand student, faculty, or trainer opinion of resources, task performance, or outcomes of clinical training, but rather to capture a snapshot of how the instruction transpires.

Figure 2

Interview Plan and Structure



Throughout each interview, field notes were documented of the interactions between the study participant and the researcher. This information was used in conjunction with participant answers and comments to the interview questions for subsequent data coding in accordance with study analysis guidelines. All fieldnotes accounted as a separate data collection tool studied and analyzed. Upon completion of each interview, an interview report was written and retained

within the field notes (Appendix C). All information was retained for an indefinite period, and any identifying participant information was scrubbed from the field notes.

Review of Physical Artifacts

Documents reviewed in this study were specific training performance checklists used by students exclusively during their clinical rotations. These documents replicate similar resources used on the job by employers training new employees and are used in student clinical training to prove minimally acceptable task performance. For example, if students are required to demonstrate correct patient identification procedure with 100% accuracy, the performance checklist list would demonstrate their trainer observed this performance and deemed it acceptable. The purpose of reviewing this document was to locate specific tasks students must performed that directly relate to patient experience, such as articulating the purpose of HCAHPS scoring, aligned of patient satisfaction to quality and quality improvement and service recovery for adverse customer service encounters.

Four competency assessments were reviewed and spanned each clinical practicum of the training program. These documents were reviewed and examined for the inclusion of patient perspective considerations and patient experience design as related to the purpose and aim of the training material. College faculty was asked to provide a digital copy of a teaching tool used for student clinical training, as well as a digital copy of their competency assessment used to document MLT student performance and task proficiency. The purpose of reviewing both items was to search for and align the inclusion of instructional items specifically related to patient experience design and the affective domain of learning associated with this task. Documentation review was performed on resources used by the student and the clinical trainer. Appendix D was used to complete the document review, and rich, thick field notes of all reviews were

documented. All document reviews were conducted by the researcher and in strict accordance with the data collection instrument. Table 2 provides consolidated explanation of the instruments used for data collection as well as the intent and purpose.

Table 2

Explanation of data collection instruments, phases and purpose.

	Phase 1	Phase 2	Phase 3
Student	Interviewed prior to start of semester for the purpose of understanding student expectation on patient experience training.	Interviewed midway through clinical rotation for the purpose of understanding how the student has been trained on patient experience.	Interviewed at the completion of clinical rotation for the purpose of understanding how the student was trained in patient experience specific throughout the entire rotation.
Trainer	Interviewed prior to the start of the semester for the purpose of understanding the trainer's plan for training student in patient experience.	Interviewed midway through the clinical rotation for the purpose of understanding patient experience training to the current point.	Interviewed at the completion of clinical rotation for the purpose of understanding how the trainer completed clinical rotation training in patient experience.
Faculty	Interviewed prior to the start of the semester to understand how faculty have planned for student clinical training in patient experience.	Interviewed midway through the clinical rotation to explore how the faculty verified patient experience is taught to the student.	Interviewed at the completion of clinical rotation for the purpose of understanding how faculty tie together the entire clinical rotation to include instruction on patient experience.
Document Review	Performance training checklists were examined from the inclusion of task performance competency on how patient experience	Review of performance training checklists to examine the presence of trainer document of student patient experience competency.	Review of performance training checklists to examine documented evidence that instruction transpired on patient experience.

	aligns with clinical laboratory work.	
Focus Group		Conducted after the middle point of the clinical rotation and included trainers and faculty. The purpose was to discuss the alignment of patient experience instruction in clinicals and in didactic as well as instructional strategies used to teach the practice.

Data Analysis and Validation

Qualitative data was analyzed through an initial open coding method, allowing for direct participant statements to be isolated from the data (Creswell & Creswell, 2017; Saldaña, 2015; Yin, 2018). Codes that emerged from this analysis were captured in well-defined codebooks (Appendix E) which were subsequently used to support a secondary coding method. The axial method of process coding was utilized to isolate participant actions revealed from the initial coding method. This yielded more expressive, action-based insights which will result in emergent themes revealed by the data (Creswell & Creswell, 2017; Saldaña, 2015; Yin, 2018). These emergent themes were reported for the intended population through the use and in alignment to theories that are used to build the study's conceptual framework and guide the execution of data collection. This strengthened the study's trustworthiness.

A codebook for collection method was developed for code tracking and documentation usage. After completion of all coding procedures, emergent themes were aligned, isolating information uncovered by the study (Creswell & Creswell, 2017; Hays & Singh, 2015; Yin, 2018). All data was maintained in a password protected external hard drive, further secured in a fireproof safe with a biometric locking mechanism. If needed, paper-based copies of physical

artifacts were stored with the external hard drive. A backup version of this data was maintained on a secondary external hard drive that was stored in a safety deposit box provided by a local bank. At the completion of the study, all data was scrubbed for participant-specific information and any other identifying or potentially proprietary resources associated with the study participant's college.

Because this was a novel study and used data collection instruments that have not been previously validated by other research studies, all data collection devices were piloted with MLT clinical trainers and MLT educators from a community college. The pilot study demonstrated that the instruments produced the intended outcomes, affected instruments revised and re-piloted, as needed, prior to use. Revisions were documented in study field notes and consisted of minor grammatical edits, consolidation of similar prompting questions, and elimination of duplicate prompting questions in both the interviews and focus group facilitation guides. Triangulation of data served to increase the construct validity of the study and trustworthiness of the information produced by the study, as well as proving the instruments accurately isolated emergent themes (Bowen, 2009; Creswell & Creswell, 2017; Saldaña, 2015; Yin, 2018). Assessment and analysis of triangulation was included in the summation of the research study. Analysis of triangulation of data demonstrated that faculty, trainers, and the student made similar statements surrounding structured and unstructured case studies used in both didactic and clinical training. These statements can be found in Table 3.

Table 3

Triangulation of Data

Participant	Well-structured case studies	Ill-structured case studies	Unstructured case studies
Faculty	"I design step-by-step examples, relevant and real examples, for use in my classes. Like a case study or scenario."	"As students progress in the program, my instruction shifts to more of a problem-solving method. I provide examples that do in necessarily fit a specific mold."	"We request that all clinical trainers come up with authentic scenarios and informally test our students. Often, the trainers just pull information out of thin air and use it for discussion."
Trainers	"The student came to clinical with a good foundation and understanding of specific task performance."	"I get requests from students to make up examples that are hard to figure out - ones that have problems and don't follow the procedure."	"Oh yes. I love making up patient situations that require students to think about the task and how the task affects the patient. Patient care is the most important part of our jobs - that is why we are here."
Student	"I like the case studies my teachers and trainers use, especially when they are step-by-step and follow the procedure."	"I was surprised that in clinicals, I could work through questions, read lab results, and actually come to a diagnostic outcome. I had no clue I would be able to learn the material and do that."	"The best part of clinical was seeing different patient diagnoses and outcomes. My trainers would use these as random examples and ask me for more specific information on what tests should be performed next in their care."

Setting, Target Population, and Study Sample

The intended setting of this study was an MLT training program taught at a public community college in the United States. One community college in North Carolina was used to recruit one MLT student for this study who planned to complete clinical training at a local critical access hospital diagnostic laboratory. One MLT student was selected to be included in

this study, two community college faculty, one laboratory director and up to five clinical trainers, employed by the hospital, were included in the study; participation was voluntary. The clinical site, trainers, and MLT the student were all selected by the MLT program director of the community college included in this study. The researcher provided no guidelines for participant and clinical site selection other than explanation that the study was voluntary and participants could withdraw at any time. After selection was made, the MLT Program director provided participant contact information to the researcher and subsequent contact was made via email. All study participants received a copy of the study informed consent (Appendix G). It should be noted that this was a bounded case study, made up of participants who only teach MLT and design clinical training for student apprenticeships or were a student of MLT Program (Creswell & Creswell, 2017).

Permission to conduct the study was obtained from the community college; completed ODU institutional review board (IRB) documentation was submitted to the community college oversight committee to ensure compliance with all institutional requirements. Documentation of informed consent, which was provided to all study participants, was included in this submission. In addition to documentation required by community college, copies of this proposal and approved IRB documents were shared with the MLT program and health science department leadership.

To recruit study participants and continued study participation, the researcher offered three monetary incentives to individuals completing the study. A donation of $200 was made to the community college MLT program, to be used at the discretion of the Program Director and for instructional needs related to student clinical training. All MLT graduates are encouraged to register for the MLT certification exam offered by the American Society for Clinical Pathology

(ASCP) which requires payment of a registration fee. For the student participant, a gift of $200 was made to offset the cost of this certification registration fee. And lastly, all participants were registered to win an annual subscription to MediaLab's LabCE web-based catalog of continuing medical education (CME) credits. For each incident of participation, the study participant's name was entered into a random drawing that took place at the conclusion of the focus group. At the end of the study, one name was randomly selected, and that individual received a digital voucher for a one-year individual subscription.

Study Participants and Study Performance

Participants. Five participants joined this study, including one student, one college faculty member, one laboratory manager, and two clinical trainers. Each participant was provided the study informed consent for review; no participant expressed questions or concerns about the nature of the study or the data collection periods prescribed by the study. Primary method of initial contact and communication with each participant was email; however, phone conversations were had with college faculty. Each participant agreed to provide information through interviews and focus group, if included, but the lab manager stated she was unable to find time to engage in a focus group with other participants.

All study participants were affiliated with the community college in some manner. The student was in her final semester of the program, and, when asked, stated that she had enjoyed her matriculation through the program and would recommend it to other individuals. Of all participants, she was the participant with whom the researcher had the most engagement and conversation, both in email and via phone or web conferencing. At each data collection point, she was very eager to help and always appeared to have a very positive demeanor and outlook on her performance within the MLT program. Although scheduling of interviews was sometimes a

challenge, she was always willing to be available at various times throughout the week. At no time did she express disinterest in participating within the study.

The Program Director of the MLT program was the study participant who represented the college faculty. The MLT program at this community college is small, which results in one full time faculty member, which is also the Program Director. However, there are two adjunct faculty who carry course loads, but they were not willing to commit to a 12-week study and three to four data collection points.

Discussion with the faculty member was productive and provided useful information surrounding curriculum development and student assessment during clinical training. Like the student, the faculty member was very eager to participate in this study and provided various times for interview and focus group availability. Most scheduling was conducted through email communication, and all interviews were via phone. Discussion's lengths ranged from 30 minutes to 90 minutes and on three separate occasions. During each discussion, the participant was very attentive to questions asked and remained engaged in the conversation. Interviews were conducted in an informal manner to promote the sharing of more candid feedback.

Representing the clinical training location, the hospital lab manager and two clinical trainers joined the study. All three individuals expressed concerns over time commitments primarily due to the workload inflicted upon the lab in response to COVID-19 testing demands. The lab manager agreed to participate in the interviews but was not willing to engage in the focus group, stating time constraints and work obligation would not permit participation. Because both clinical trainers were able to participate in all data collection encounters, the decision was made to continue to include the lab manager in order to gain the leadership perspective on patient experience and MLT clinical training. Collectively, the three laboratory

employees possessed over 50 years of training experience with MLT students. The clinical trainers were eager to participate and stated that providing this information to the study would also help them learn how to better engage with their students regarding patient satisfaction and overall experience.

Study Performance. The data collection phase of this study began in 2021 and lasted four months. Prior to the start of interviews, study participants were contacted via email and asked for specific dates and times a scheduled interview would work best for the respective schedules. All interviews took place during the specific dates and times indicated by each participant, and all participants chose to interview via telephone, although Zoom web conferencing was an easily accessible option.

All participant interviews were conducted one week prior to the start of the spring semester, and each interview was conducted on the same day, mostly one to two hours apart. It was noted that the student interview resulted in the field note documentation of a seemingly nervous student, yet a feeling of excitement to be nearing the completion of her degree program.

Interviews with the lab manager, clinical trainers, and college program director were unremarkable regarding feelings of apprehension or nervous excitement. Field note documentation included description of what seemed to be confident, knowledgeable, and highly professional clinical laboratory science experts who had trained students in the past.

The second round of interviews took place in mid-March, during the college's Spring Break. This timeframe was selected after discovering that the student would be transitioning from one area of the clinical lab to the next, meaning that training was completed in one task area and yet to begin in another. As with the initial interview, this one was easily scheduled; however, the student lacked the nervous tone in her voice. She seemed to be more confident in

the knowledge she had acquired in didactic coursework and its subsequent transfer to the localized context of use. Interviews with the lab manager, clinical trainers, and the college program director were, again, unremarkable for significant and impactful descriptions of the encounters.

The final interviews took place during the second week of April, after the student had completed the entire clinical training in both technical areas of the lab. At this time, the researcher could sense a significant difference in her demeanor and confidence level; it was almost a tone of assurance in task mastery so strong that the impression she left was one of potential arrogance at the depth of her knowledge base. Although not rude or offensive in any way, it was evident that she had mastered the required basic skills of the clinical training period and was potentially ready to apply those skill sets within the workplace.

Field notes were taken during each part of data collection. Table 4 explains the purpose and focus of field notes for each collection instance. At the completion of data collection, field notes were reviewed and organized to align with associated data collected at each point in the study.

Table 4

Focus of Field Note Review

Data Collection Tool	Focus of Field Notes
Document Review	Location of document review performance, date and time of day were recorded. The physical and emotional characteristics of the reviewer was documented, as well as the comfort level of the location review performance.
Interviews	Location of interview performance, date and time of day were recorded. The physical and emotional characteristics of the reviewer was documented, as well as the comfort level of the interview location Regarding the study participant, body language, degree of attentiveness, inflection of voice and tone, and all other physical or emotional characteristics of the interviewee.
Focus Group	Location of focus group performance, date and time of day were recorded. The physical and emotional characteristics of the reviewer were documented, as well as the comfort level of the interview location Regarding the study participant, body language, degree of attentiveness, inflection of voice and tone, and all other physical or emotional characteristics of the interviewee were recorded in the field no.

Amid an historical staffing shortage, the clinical training location would not permit the clinical trainers to participate in two focus groups due to scheduling conflicts and workplace obligations. However, a focus group was conducted at semester midterm and included clinical trainers, laboratory manager, and college faculty. The focus group lasted approximately 45 minutes and yielded productive discussion on how students are trained to focus on patient care and task performance. At the conclusion of the focus group, a transcript was drafted and reviewed in comparison with field notes taken during the group discussion. Minor edits were made based upon examinations made throughout the focus group, and after final edits, the transcript was included within the study field notes.

Coding of Collected Data

Primary open and secondary process coding methods were used to systematically examine the information collected during each step of the data collection process. Open coding procedures were used to initially isolate common information shared amongst the participants; this method was selected to allow for a greater degree of openness to words, statements, and phrases shared during the interviews and focus group.

A secondary, axial, coding process was used to consolidate commonly encountered open codes primarily isolated from all data collection devices. This process acutely focused the participants' insights and produced more refined information that yielded commonalities between the participants as well as the different methods of data collection used in this study. Secondary coding yielded information used to support triangulation of qualitative data across data collection techniques and between study participants. This helped increase trustworthiness of the study,

At the completion of axial coding, emerging codes were defined within the context of the study and within the participants intended purpose and context. Additionally, the codes were tallied and ordered from most to least, which revealed the more common topics shared between the participants, amongst data collection devices, and within the document review and field notes examination. Prevalent coding outcomes, codes with more than one emergence during the coding process, were used to uncover themes and generate answers to the study research questions.

To ensure these emergent themes were accurately connected to the collected data and ultimately answers to the research questions, a researcher and fellow health science colleague reviewed the collected data and resulting findings to validate the associated themes. This individual possesses over 30 years of experience in healthcare, 20 years of experience as a health science educator, and is currently completing a Doctor of Education, conducting research in

multiple mini-interviews (MMI) as assessment of student readiness for program admission. After this review, themes were validated as supported by the associated data.

Exclusionary Criteria

Certain healthcare training programs and healthcare educational professionals were deliberately excluded from this study because the objective is to examine clinical training curricula of MLT training programs and their associated clinical training practicums. Entities that were excluded from this study include all other allied health science programs, nursing, and medical education programs designed to prepare healthcare graduates to enter the workforce. Faculty within MLT programs who did not design student clinical training resources were excluded from this study. Instructional Designers who did not provide instructional design support for an MLT program were excluded from this study. Additionally, employee workforce development training and instructional programs were excluded, as the study is focused on the formal education of adults planning to enter the MLT profession not currently working professionals. And lastly, clinical trainers who were not employed as Medical Laboratory Technicians by the clinical hospital laboratory participating in the study were excluded from participation.

Ethical Considerations and Limitations of the Study

Although no specific patient information was gathered during this study, great care was taken to protect any patient information which might have been inadvertently shared by the study participants. Strict adherence to patient privacy and confidentiality was maintained throughout the entirety of the study, and inadvertently captured patient information was scrubbed from associated field notes.

Because the researcher is both a former Phlebotomist, Medical Laboratory Scientist, an MLT Program Director, adjunct faculty in a Clinical Laboratory Science program, and an Instructional Designer, researcher bias was bracketed during this study to ensure no personal opinions or previous experiences affect the data collection and analysis of the research. This bias could pose a significant threat to the trustworthiness of the data and therefore was considered a potentially significant limitation to the study. Specific biases that could have contaminated this study include researcher opinion of design and development practices of the student training material, instructional strategies and methods with which training was conducted within the department, backgrounds of faculty and professional colleagues, and past participation experience in various department facilitated courses. Continual reflection of these biases took place throughout the study, and the researcher purposefully considered the degree of interjection and subsequent elimination of the bias, journaling reflection which was retained as part of the study field notes.

Another significant limitation of this study was the fact that there exist no validated data collection instruments used for previous studies on the research topic. Because of this, the data collection instruments in this study were novel and posed the risk of threatening the trustworthiness of this study. To mitigate this risk, three separate data collection events took place, using four different data collection tools (Creswell & Creswell, 2017; Yin, 2018), all aligned to and supported by the study's conceptual framework. Utilization of the four data collection instruments enhanced replication of the study, thus establishing a greater degree of trustworthiness. All data collection instruments were piloted prior to study use; this pilot was conducted independent of the researcher, by a healthcare professional with knowledge of MLT

practices. Participants of the pilot study were representative of the intended audience who were examined by the data collection instruments.

Summary

This case study was designed to describe how an MLT training program at a public community college in the United States designs and develops student clinical training to include the patient experience and perspective. Participants in this study were either faculty of accredited MLT programs or Instructional Designers who aid in the creation of student clinical training material designed to be used within a clinical training setting, the hospital laboratory, students engaging in clinical training, and hospital workers who served as trainers to the students. The three-phase case study model was implemented because it lends itself to reflective practice, refinement, and iteration of data collection tools based upon previously collected data (Yin, 2018). Throughout the study, data collection devices were refined to gather more specific information during subsequent data collection events. This aided in producing more specific, rich thick descriptions of context and yielded more trustworthy results and subsequent outcome implications (Yin, 2018).

To triangulate the data (Bowen, 2009), three separate data collection events and four instruments were employed: a focus group, interviews, field notes, and document reviews. Comparison of participant interviews established a strong degree of triangulation in that all perspectives of the participants were almost identical. All data was securely maintained and held in strict confidentiality in accordance with healthcare privacy and confidentiality regulations and as mandated by Old Dominion University requirements. All data collected was coded with primary and secondary coding methods to reveal descriptive information as to how patient experience is considered in the design process of student clinical training within the hospital

laboratory. Report of data analysis was synthesized to explain study findings in detail, and implications of findings were shared as recommendations of front-end analysis design strategies that will help integrate patient experience within developed student clinical training resources.

Chapter 4

FINDINGS

This case study set out to explain how clinical training in MLT curriculum is designed to include considerations for education on patient experience. Research questions answered by this study were:

- How is MLT student clinical training curricula designed to integrate considerations for patient experience and patient satisfaction within context-specific instruction and formal program curriculum?
- What instructional strategies are used to ensure the MLT clinical student is educated about patient experience and patient satisfaction and demonstrates that knowledge in practice?

The study examined one student from one 2-year Medical Laboratory Technology program offered in the North Carolina Community College System. One student was followed throughout the course of her clinical training experience, and community college faculty and clinical trainers were interviewed about their experiences with the design and use of clinical training resources. The qualitative study took place over one semester, with data collection points at the beginning, middle, and end of the semester. A combination of participant interviews, a focus group, document reviews, and field note examination were used to identify themes related to clinical training resource design.

Document Review

Review of the clinical competency checklists yielded no evidence of student requirement for training in patient experience or patient satisfaction promoted by high quality of task performance. These performance checklists were used during clinical training to record student

task performance and degree of student proficiency. No indication of student knowledge related to patient experience or patient satisfaction was observed. Copies of documents were retained, and evidence of document review was included in the study field notes.

Interviews

Interviews between the student, the clinical trainer, and the college faculty demonstrated almost identical information at each collection point in the data collection period. Results suggest clinical training of the MLT student focuses on teamwork, communication, and the use of relevant case studies. This information was consistently shared during every interview and from each study participant.

Teamwork was one of the most discussed topics of all interviews. Both the student and the student's clinical trainers talked at length of the requirement of a well-functioning team of highly skilled laboratory professionals. One clinical trainer stated, "The lab is like a baseball or football team; we all may have different jobs, but we all are aiming for the same goal. And that goal is taking care of our patients." The same clinical trainer continued, "I have worked in labs where teamwork was nonexistent, and everyone had to fend for themselves. Not sure what that is called, but it's definitely not a team. A team pulls together to help one another all the time."

> Trainer1: You know, there is no I in team, but there is Me. That probably makes no sense, but the way I view it is that my team is only as strong as our weakest team member. And for that weak member, the rest of us should pull together and help (Shared during first interview).

Study participants also consistently added that for a team to work well and be successful in diagnostic medicine they must have clear, direct, and concise lines of communication. All participants shared a similar perspective on communication and how vital it is within healthcare and for the patient.

> Trainer2: We use this term called SBAR (Situation, Background, Assessment, Recommendation) to help us communicate in a better manner, and we try very hard to teach this to the student. Sometimes we get so busy that we forget to share it, but that is because it is so hardwired within all of us now (Shared during last third interview).

> Trainer2: Shift logs are a great way to share information with the next shift and even the shift after that one, but nothing takes the place of fact-to-face communication, especially when it comes to patient care. I prefer to talk to my coworker about the situation to make sure I can ask questions and get more clarification if needed (Shared during third interview).

A common instructional strategy that garnered much of each interview was the importance of case study scenarios to explain topics and review specific patient situations. Mainly, the student shared the most information, but clinical trainers and the college's program director all remarked on the benefit of using case studies to bring the information to life and present a true representation of how the work directly impacts the patient.

> Student: During the day, something would happen with an instrument, patient sample, or even an encounter with a coworker, and the clinical trainer would take the time to make up a random case study on the fly. She would literally take the situation that had just happened and spun it into something relevant that I could use to learn from. Then she would quiz me on it. I have to say that the case studies really helped me understand how my work directly impacts the patient (Shared during first interview).

Focus Group

Information shared during the focus group was primarily concentrated in the student's capability to communicate effectively and engage in clinical training just as an employee would in a formal job. Very little information was shared regarding specific instructional strategies used; however, there was a focus on training the student in the same context as a new employee in the same job classification.

Clinical training, which in this context can be defined as a cognitive apprenticeship, focused on training the student in almost the same exact manner as if the student was a new employee. Clinical trainers have competency checklists used to document student performance once the associated task has been mastered. If the student had yet to master the task, clinical trainers aided the student in reflecting on why the task may not have been performed correctly, demonstrated and allowed the student to model correct performance, and permitted the student to refine and repeat the task. The lab manager and clinical trainers all stated this is the manner they generally train their staff, although there are limits to iteration with a new employee. Students have the benefit of being immersed in the learning environment for the purpose of introduction to those entry level job skills.

Another main topic of the focus group was communication, and its importance could not be overstated by the participants. Although the college's program director shared that students are taught various communication strategies and required to complete specific general education courses in English, Communication, and Psychology, nothing can prepare the student, fully, for the experience of working under the pressures and stress of a busy hospital laboratory environment. The only way to train the student on effective communication during stress is to place that student into those stressful situations with a seasoned clinical trainer.

Examination of the field notes provided the researcher with greater insight and reflection into the behavior of each study participant, while also allowing the researcher to document her own behavior and feelings during each interview, document review, and focus group. Through the review of specific dates and times as noted in the field notes, recollection of the discussions was easier to generate and resulted in a greater ability to analyze the data.

Table 4 provides all consolidated codes found through the coding process.

Coding Outcomes and Emergent Themes

Prevalent codes were organized into the following categories: instructional strategies, communication-related, modeled behavior, and patient-focused. These categories represent emerging themes of the study.

Prevalent coding outcomes are outlined and graphically demonstrated in Figure 3 and Table 5. Of the information gleaned in this study, authentic case studies and patient scenarios, teamwork, and patient impact were the most frequently encountered topics of discussion during interviews, the focus group, and field note review and appear to have emerged as themes of this research. Figure 4 is further representation of these categories and the frequency of codes.

Table 5

Prevalent coding outcomes

Code	Frequency	Code Definition
Creating authentic case studies and patient scenarios	9	Instructional scenarios created with real-life examples and laboratory data, specifically aligned to clinical training learning outcomes.
Commitment to teamwork	8	Student, clinical trainers, and college faculty have a strong interest in working together for a common goal.
Impact to the patient	7	The work completed will significantly impact the care delivered to the patient, either in a negative or positive manner.
Attention to purpose	4	All parties involved in student education and clinical training understand the purpose of training and give attention to needs surrounding it.
Active engagement	4	Active participation of the student in their clinical training.
Focused helper	4	The understanding that a student in clinical training is producing work with the intent of helping the overall purpose and mission of the laboratory.
Customer Service oriented	3	In service to everyone the student encounters.
Motivated learner	3	The desire a student possesses to engage in their own clinical training and refinement of task performance.
Engaged as an employee	3	Students actively participate in the department workload as if they are employees.
Interpersonal communication	3	The practice and refinement of engaging in and sustaining verbal and nonverbal communication between individuals.
Student reflective evaluation	3	Student practice of evaluating a previously completed situation for the purposes of performance improvement.

Dynamic training assessment documentation	3	Documentation of clinical training and task performance in a manner that allows for the evolution and customization of the document based upon student interactions as they relate to the course learning outcomes.
Reinforcement of learning objectives	2	The continual spiral back to learning objectives associated with task performance and patient care.
Focus on affective domain	2	Clinical trainer and college faculty attention to honing the student's affective behaviors as related to task performance and patient interaction.

Figure 3

Pareto chart of prevalent codes

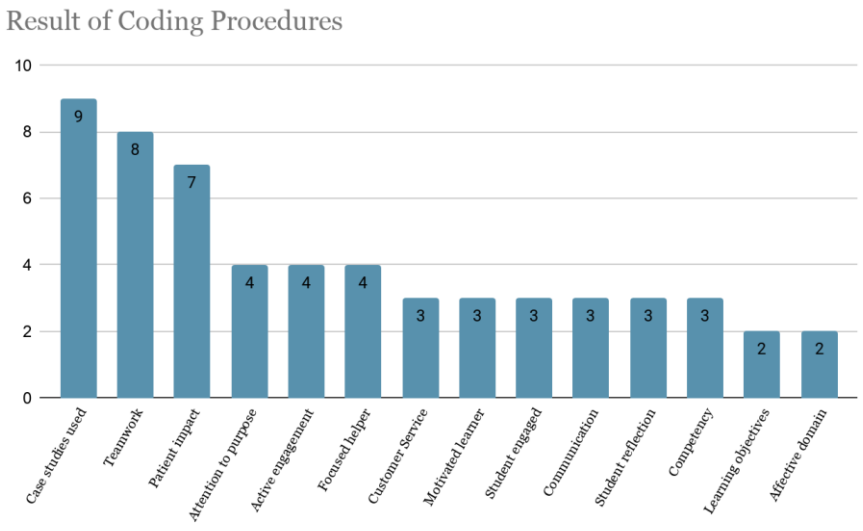
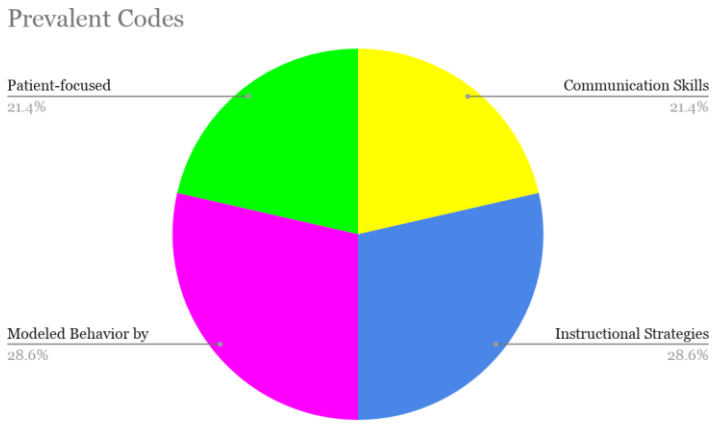


Figure 4

Prevalent code categorization



Research Question One: Patient Experience Design and Clinical Training Design

Three specific and recurring findings were observed after review of data collected from interviews, the focus group, document review and a detailed examination of the field notes. These findings include use of unintentionally included patient experience instruction within clinical training design, the use of problem-based learning strategies to teach problem solving, and the use of case studies scenarios in both didactic and clinical instruction. Answering research question one, patient experience is not purposefully considered in the design of student clinical training.

Interviews, a focus group, and document reviews demonstrated there was no explicit step or purposefully considered component for patient experience inclusion in the design and development of clinical training; however, by topic default, instruction on patient experience was present within both didactic and clinical instructional strategies. A review of the documentation used during a student's clinical training lacked specific mention and competency assessment directly pertaining to student understanding of patient satisfaction and patient experience as

utilized within the clinical laboratory. Additionally, information shared within interviews and a focus group demonstrated a lack of purposeful mention of patient experience and patient satisfaction associated with specific task performance outcomes; however, through analysis of emergent codes, it was found that the practice is present within clinical training and within coursework that prepares students for clinical training. Table 6 outlines the prevalent codes specifically associated with this research question that emerged after primary and secondary coding practices were completed.

Information provided by the study participants did demonstrate components of patient experience, specifically in affective domain characteristics, communication and interpersonal skills, exhibited by the student during clinical training. A commitment to teamwork, consideration of how work impacts the patient, and a keen sense of purpose regarding the standard of work performed were the top codes uncovered by the study that answer this research question related to inclusion of patient experience design within MLT curriculum.

Table 6

Prevalent coding outcomes as related to inclusion of patient experience in curriculum design

Code	Frequency	Code Definition
Commitment to teamwork	8	Student, clinical trainers, and college faculty have a strong interest in working together for a common goal.
Impact to the patient	7	The work completed will significantly impact the care delivered to the patient, either in a negative or positive manner.
Attention to purpose	4	All parties involved in student education and clinical training understand the purpose of training and give attention to needs surrounding it.
Active engagement	4	Active participation of the student in their clinical training.

Focused helper	4	The understanding that a student in clinical training is producing work with the intent of helping the overall purpose and mission of the laboratory.
Customer Service oriented	3	In service to everyone the student encounters.
Motivated learner	3	The desire a student possesses to engage in their own clinical training and refinement of task performance.
Engaged as an employee	3	Students actively participate in the department workload as if they are employees.
Modeling of trainer performance	2	Students, clinical trainers, and college faculty promote, practice and engage in experiential learning and refinement of task performance.

Research Question Two: Patient Experience Design and Instructional Strategies

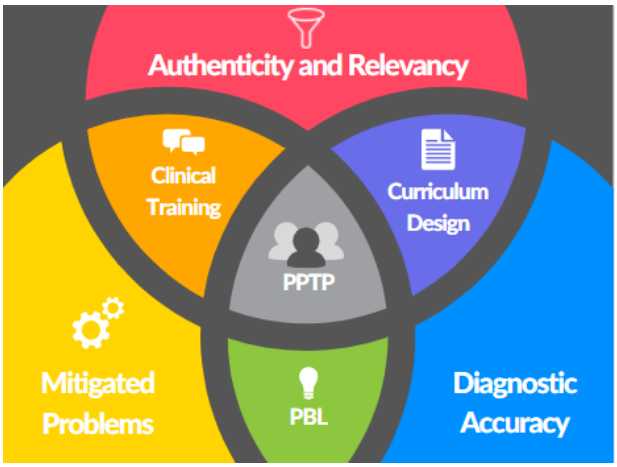
Of all the findings, the use of case studies and problem-based learning activities were consistent across didactic courses and clinical training. Findings indicate that the inclusion of the patient experience is not an explicit component of course or curriculum design but is an active part of the student's education both in the classroom and in the clinical training locations.

Guided by the conceptual framework, the case study findings can be aligned to specific components of the framework that directed the study. Data demonstrated three characteristics that work together to guide the design of clinical training that promotes students to perform tasks using patient experience considerations: diagnostic accuracy of task performance, authenticity and relevance of clinical instruction, and the ability to mitigate problems during task performance. Each of these framework components align to demonstrate more specific design characteristics that can be used to generate heuristics aimed at refining and focusing MLT clinical training to patient perspective. Through the design of MLT curriculum, integration of problem-based learning strategies, and purposeful performance of clinical training executed by

the clinical trainers can serve to elicit student knowledge of patient perspective and patient experience surrounding diagnostic testing performance. Figure 5 provides an example of this comprehensive heuristic aligned to the study conceptual framework.

Figure 5

Study Findings Aligned with the Conceptual Framework



Within the educational realm of student clinical health science training, instructional strategies are often considered to be synonymous with learning activities. These strategies are activities that undergird and become a comprehensive component of semester-long instruction and define the learning experience received at certain clinical training sites. For example, the implementation of a case study, as a learning activity, can become a consistent, foundational, weekly method of debriefing the student's practicum and reinforcing specific tasks the student should have mastered by week's end. This strategy creates a more authentic, relevant learning experience for the student, one that can be transferred into an aligned context of use as the student progresses in the training.

Utilization of case-based scenarios, more often referred to as case studies, was the most prevalent information shared in the interviews. Along with inclusion of patient scenarios, coupled with aligned laboratory data, clinical trainers use this instructional strategy to teach and

refine student understanding of laboratory task performance. It was also discovered that college faculty incorporate patient case studies within didactic instruction to reinforce the technical, methodological, and practical transfer of methodology knowledge into practical task performance executed by students in preparation for clinical training. This instructional strategy is rooted in the course learning objectives, which are constantly referenced in class.

The college program director stated that “case studies are heavily utilized in the preclinical instruction students receive at the college”. The case studies utilized in didactic courses aid in the preparation of students to meet program learning outcomes and ultimately acceptable task performance in clinical training. The case studies used in didactic courses are generally step-by-step and do not vary greatly in complexity, but they are authentic and relevant to the scenarios students will encounter during clinical training.

According to the student, the complexity of case studies drastically increased during clinical training. Although these cases and scenarios are authentic and relevant to associated task performance, they are not created step-by-step or all information needed for resolution, they are most often developed impromptu with problems clinical trainers and students encounter during task performance. Clinical trainers stated, “this seems to equate to a relevant instructional strategy that is applied at the ideal time during instruction.”

A dynamic training checklist and competency assessment is utilized by the clinical trainers to provide the student with evaluation of task performance and evolves with the student as unique training opportunities arise. This means that if a vital task is not included in the training assessment document provided by the college, clinical trainers can exercise their instructional freedom to add the task and assess the student on performance.

Student interpersonal communication skill is another focus of clinical training, specifically with healthcare employees and with patients, stated by both the student and the clinical trainers. The focus places emphasis on the affective domain of learning and serves to promote overall task performance especially when the task relates to direct patient care. Student, clinical trainers, and college faculty echoed this information throughout the course of data collection.

Table 7

Prevalent coding outcomes related to instructional strategies teaching patient experience

Code	Frequency	Code Definition
Creating authentic case studies and patient scenarios	9	Instructional scenarios created with real-life examples and laboratory data, specifically aligned to clinical training learning outcomes.
Interpersonal communication	3	The practice and refinement of engaging in and sustaining verbal and nonverbal communication between individuals.
Student reflective evaluation	3	Student practice of evaluating a previously completed situation for the purposes of performance improvement.
Dynamic training assessment documentation	3	Documentation of clinical training and task performance in a manner that allows for the evolution and customization of the document based upon student interactions as they relate to the course learning outcomes.
Reinforcement of learning objectives	2	The continual spiral back to learning objectives associated with task performance and patient care.
Focus on affective domain	2	Clinical trainer and college faculty attention to honing the student's affective behaviors as related to task performance and patient interaction.

Emerging Themes

Through the examination of study findings, themes emerged from triangulated data, demonstrating how patient experience is integrated within classroom and laboratory instruction, as well as correlated between the two instructional environments. The primary purpose of education in laboratory task methodology and protocol is correct execution of the associated task in order to arrive at the desired outcome, which is an accurate and reliable result for the patient. This is the sample purpose of task performance during the student's clinical; however, the difference is that students should possess the didactic knowledge, transferring that information to practical application in the clinical laboratory. Task performance is the common thread tying classroom instruction together with clinical training. This study revealed three common themes, all founded in task performance: accuracy of task performance, reliability of task performance, and a high degree of performance integrity even during problems; all of which can be taught by case-based learning strategies.

Accuracy of Task Performance

All study participants, 5 out of 5, stated the most useful instructional strategies connecting task performance to patient experience contained case studies. Although each participant commented that the case study yielded a different outcome for their respective purpose, each participant mentioned that using the case study examples emphasized how accuracy of task performance promoted a more efficient, highly focused task performance. The student explained that "having the case as an example helped me understand the steps of the procedure more clearly." Faculty and trainers also added that when students engage with a case study, they exhibit freedom to explore and critically think about the most appropriate and effective resolution, specifically the one that is best for the patient. As stated by the clinical

trainer, “I made up information around a specific patient problem or situation we saw and asked [the student] for an answer.” Both faculty and trainers explained how they allow students to explore resolution options, unprompted, and followed up with rich feedback, correcting student decisions and providing instruction on the correct task performance. Through this strategy, students are able to uncover not only the correct task performance but also will identify incorrect practices that would affect accuracy in task outcome.

Reliability of Task Performance

Although it is vital to accurately perform tasks in healthcare, it is equally important to cultivate the ability to consistently perform tasks with a high degree of reproducibility. Accuracy is futile if the same result cannot be achieved through iteration. Five out of five of the study participants stated that ill-structured case studies, meaning case studies that lacked all necessary components for resolution, aided students in task practice apart from strictly following approved procedures. This instructional strategy specifically helped refine task practice and create a refined task performance, helping the student achieve habituation and automaticity. In the first interview, the MLT program director stated that “removing critical parts of the procedure, after students have practiced the task multiple times, helped students detect errors in task performance and correct protocol prior to reporting of patient results.” Additionally, the student verified this information by adding that “it was helpful to learn what not to do as much as it was to learn what to do; I feel like I can troubleshoot problems better when I learn with rigorous instruction.”

A combination of ill-structured and well-structured case studies will help the learner refine task performance in the midst of less than ideal or atypical workplace scenarios. The opposite of didactic coursework, clinical training provides a cognitive apprenticeship at the localized context of use, whereby the student is literally performing laboratory testing for the

patient. In this uncontrolled learning environment, students will find an infinite number of patient situations that will require response with accurate and reliable task performance. The utilization of ill-structured case studies as the primary means of instruction will serve to prepare the MLT student for a number of atypical situations that will be encountered on the job.

Task Performance Integrity

Teaching with problems, after the learner has mastered associated task performance, can serve to promote critical thinking skills used to troubleshoot aberrant situations and possibly prevent error with future task iteration. Task performance integrity means that standard work performed is accurate and reliable even in the midst of significant problems or situations that can threaten the testing environment and associated outcomes. Regardless of patient condition, to the patient, there is only one patient, and healthcare professionals should be aware of this perspective and integrate that within their daily task performance. Their integrity of work performed impacts the immediate and long-term care provided and thus must be integrated within clinical training.

The unstructured case study is a heuristic providing the learner a real-time, unplanned learning event based upon any given situation which may have arisen during the work schedule. Coupled with more purposefully controlled and developed ill-structured case studies, the unstructured case study provides reflective practice for the MLT student immediately after the situation has been resolved. Often these situations can come from an emergent situation requiring the healthcare professional immediate, unplanned actions that should be executed in a very rapid, highly accurate manner. This is when the establishment of habituation and automaticity, generated from practice with well and ill-structured case studies serves to train the student to lean heavily on mastered skill sets. Debriefing and rich, discussion-centered feedback is a critical

part of the unstructured case study, especially since there was no purposeful planning on the instructor's part in the design, development, or delivery.

Summary

To answer the two research questions presented in this study, a combination of qualitative data collection instruments was employed to conduct participant interviews, a focus group, document review, and examination of study field notes. Prevalent codes emerged from primary and secondary coding processes to reveal the main themes of instructional strategies used, communication skills, patient-focused instruction, and modeled behavior by the student during clinical practicums. It was discovered that patient experience design is not a purposeful consideration during the design phase of clinical training curriculum, neither is the inclusion of HCAHPS domains, which are focused on patient experience and patient satisfaction (CMS, 2020); however, through the integration of the emergent themes from this study, both are indirectly and unintentionally included in all clinical training experiences. Additionally, the most encountered instructional activity utilized by clinical trainers is case-based scenario creation, review, and reflective discussion. Specifically, well-structured case studies used in classroom instruction, ill-structured case studies used in both the classroom and clinical training, and unstructured case studies used in clinical training were used to help the student establish a high degree of skill set integrity through accurate and reliable task performance. Regardless of intention of use, all case studies are authentic and relevant to the training of the MLT student and the intended learning outcomes of clinical laboratory science education.

Chapter 5

DISCUSSION

This case study set out to explain how one health science curriculum at a North Carolina community college integrates student awareness and consideration for patient experience within clinical practicum task performance. Participants in this study included one student, the student's clinical trainers, and the college faculty of the health science program being studied. Individuals participated in a three-phase interview, and a focus group designed using a holistic three phase case study model as explained by Yin (Yin, 2018). Additionally, artifact examination took place in the form of document review, specifically of the competency assessment documentation utilized by the student and the clinical trainers during the clinical practicum. This documentation served to prove student competency and proficiency in task performance and is a requirement for degree completion.

Two research questions were answered by this study:

- How is MLT student clinical training curricula designed to integrate considerations for patient experience and patient satisfaction within context-specific instruction and formal program curriculum?
- What instructional strategies are used to ensure the MLT clinical student is educated about patient experience and patient satisfaction and demonstrates that knowledge in practice?

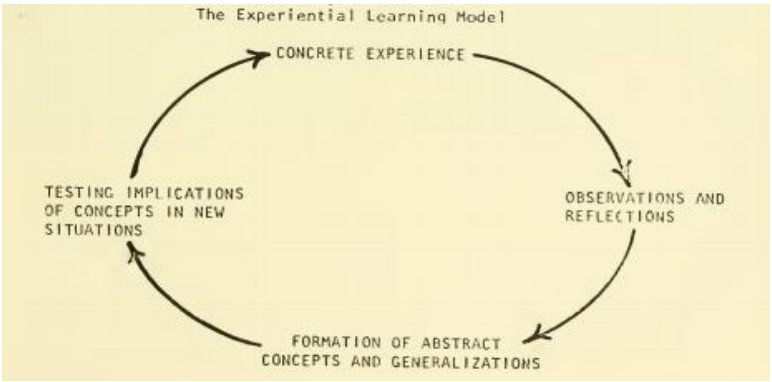
The study lasted 12-weeks and consisted of three phases, each identical to the others yet conducted at staged times throughout the semester. This data collection method followed the Yin case study three phase model and was the purpose for choosing this methodology.

Experiential learning and situated learning drove the conceptual framework (Figure 1) development, along with patient experience design. Clinical training is highly experiential and situated within a specific context of information and task performance; in this study, MLT student clinical training within a hospital clinical laboratory setting was the primary focus. By examining the context of training, curriculum development for use during clinical training, and how the MLT student is trained during clinical practicums, the study sought to examine how the inclusion of patient experience can shape the outcome of student performance, specifically task performance from the patient's perspective. The integration of each component of the conceptual framework represents an integral component of clinical training.

Kolb and Plovnick (1974) present experiential learning theory as a means of career development for the adult learner. In this theory, a continual and cyclical model can be observed which promotes refinement of career -associated tasks through the reflection and iterative practice of skill sets. Figure 6 (Kolb & Plovnivk, 1974) provides an example of the learning model and clearly depicts how observations and reflection generate learner formation of topic concepts tested and refined through concrete workplace experiences.

Figure 6

The Experiential Learning Model (Kolb & Plovnick, 1974)



This model was used within this study to demonstrate how the MLT student is trained during their clinical practicum experiences. Through iterative refinement, students develop skill sets tested and refined with authentic practice of the task.

To connect the student learning experience with its most authentic and relevant context of use, MLT students practice tasks in the literal location of where these skills will be applied, the clinical laboratory. It is this fact that results in the use of situated learning theory, where learners engaged in what Lave and Wenger (1991) describe as legitimate peripheral participation. This participation happens alongside a seasoned, trained professional who guides the student through the correct performance of tasks using modeling, feedback, and iterative practice (Lave & Wenger, 1991; Lave & Wenger, 2001). The premise of this theory is that the student learns the information better and with a greater depth of understanding when the information is learned in the location where it will be used (Lave & Wenger, 1991; Lave & Wenger, 2001).

Through the direction and support of the PPTP model, MLT program faculty can create and utilize a combination of both well-structured and ill-structured case studies to design and develop didactic instruction. The majority of these case studies should be well-structured, providing highly detailed, guided instruction on the task performance of standard operating procedures and protocols. Establishment of unproblematic, typical task performance can be achieved and mastered through this strategy. Additionally, this serves to prepare the MLT student for entry into clinical training and successful standard work performance throughout practicums.

Authenticity and Relevance: Clinical Training Designed with Case Studies

The entirety of the MLT student training, both didactic coursework and clinical training practicums includes case studies, specifically used in conjunction with specific tasks learned at

the present time. Based upon the stage of student progression through the program, students may utilize well-structured authentic case studies or ill-structured, problem-based case studies designed to activate prior learning and advance their troubleshooting skills. These unstructured case studies provide specific examples of how students can apply learned testing methodologies and quality control techniques to arrive at the correct result for associated diagnostic testing. As well as ideal and perfectly executed task examples, these case studies can also demonstrate incorrect task performance and associated outcomes, which is equally important as knowing the correct way to perform the associated procedure. This strategy employs a combination of situated learning theory and experiential learning where students' task mastery is refined within its localized context of use through conceptualization of information and refinement of task execution (Brown et al., 1989; Kolb & Plovnick, 1974; Lave & Wenger, 1991).

Obtaining the Right Result

The outcome of all diagnostic testing performance is to obtain and report the correct result (ASCLS, 2020; ASCP, 2020; CLIA, 2020; CMS, 2020; Strasinger & DiLorenzo, 2019). Reporting incorrect results, even by a minor degree, can result in significantly adverse effects to patient care. For example, reporting blood group and type as A Positive for a truly A Negative patient could result in the incorrect transfusion of blood product. Although this may not generate an immediately detectable reaction, subsequent transfusions, even years later, could produce a life altering outcome for the patient. Reasons such as this, and there are an infinite number of examples, are why there is a zero-tolerance expectation for error in the clinical laboratory. However, amid this expectation, errors happen and will happen because human beings are responsible for task performance (Pershing et al., 2006).

Obtaining accurate results begins the first day of any clinical laboratory science training program (Strasinger & DiLorenzo, 2019). Understanding why we report accurate results is just as important as knowing how to report accurate results; it all starts and ends with the patient. Historically, case studies have presented information that is an example of typical or ideal situations rather than an example that instructs the student to identify mistakes in the case or task. Knowing what not to do regarding task performance is just as important as knowing how to perform the task with perfect accuracy and precision (Netjes et al., 2009). One may argue that both are one in the same, but rarely do healthcare professionals set out to perform a task with error, because of this, there are an infinite number of mistakes that can generate error in the performance of a diagnostic test. Understanding the task-associated mistakes adds value to the learner's knowledge base because it trains the learner to expect and detect errors in the testing process. Inclusion of authentic, relevant problem-based learning examples serve to deepen the student's mastery of task performance and test result interpretation (Gilbert et al., 2014; Gwee, 2009; Jonassen, 2011; Kolb & Plovnick, 1974; Van Merriënboer et al., 2002).

Diagnostic Accuracy: Case Studies Designed with Problems

Highly proficient performance of healthcare professional tasks requires an equally high degree of acute critical thinking skills. Often, this degree of highly refined skill set is not a characteristic clinical laboratory science students bring with them upon program enrollment. It is this critical need that requires technical training programs to integrate problem solving learning activities within program curriculum if the intended outcome is a competent MLT graduate who can critically think through and solve complex problems.

Consistently throughout this study, each participant discussed the benefit of working with various types of problems. From simple to solve to unable to solve, clinical training on the

process of troubleshooting situations to arrive at a root cause of failure is one of the foundational components in the clinical training of MLT students. Prior to the start of clinical training, program faculty stated that case studies are an ever-present component of instructional strategies both in synchronous and asynchronous modes of lecture delivery. The student participant's feedback on instructional strategies included the same information. When prompted about the level of case study difficulty in program coursework, both individuals described well-structured case studies, specifically ones that easily led the learner to the correct result. Throughout each participants' answers to probing questions surrounding well-structured problem-based case studies, it was evident that the learning activities included all needed information and resources to arrive at the correct result. From this information, it can be inferred that the MLT didactic courses include well-structured, problem-based learning strategies designed to align with the learning goals of the units of instruction and overall course learning goals. The implementation of this method of case study introduces the student to the basic critical thinking strategies needed to systematically and completely solve task-related problems within the clinical laboratory (Jonassen, 1997)

Case studies presented by clinical trainers throughout the student's clinical experience were not well-structured. Since many of the case studies were literally created in real-time, there was no alignment to learning objective in the format nor was there systematic design of troubleshooting steps in conjunction with previously mastered curriculum content. When asked how the trainer used cases studies, it was explained that as situations arise within the workplace, examples of problems associated with specific cases would be discussed with the student and amongst other employees. Rather than being ill-structured, where the problem lacks the comprehensive inclusion of all necessary components for resolution, these case study problems

were unstructured, leading the student to a very wide discussion on problem solving tactics. As with the information provided by the college faculty and the student regarding well-structured problems in didactic coursework, both the clinical trainer and the student iterated the same answers regarding case studies during clinical experiences.

Additionally, the student indicated they found the unstructured case studies more valuable than the well-structured cases from her class lectures but stated that without the well-structured problems, she would have struggled to work through problem solving discussions with the trainer. This leads one to infer that the building of critical thinking skills required in healthcare professions happens through the implementation of a variety of differing degrees and types of problem-based learning activities, beginning with well-structured and culminating with unstructured, which is reflective of the authentic workplace environment. This is very much a constructivist learning strategy and serves to aid in teaching critical thinking and problem resolution aligned with instruction topic (Jonassen & Rohrer-Murphy, 1999; Wilson, 1996).

Mitigated Problems: Clinical Training and Unstructured Case Studies

A prevalent instructional strategy used during clinical training was the integration of authentic and relevant unstructured patient case study scenarios. These case studies are typically generated during actual practical task performance and without any previous prompting or without specific structure, which makes them highly situational and specific to one intended purpose (Lave & Wenger, 1991). Clinical trainers take the example directly from the work the student is currently doing and generate case study examples of how that work impacts patient care. After discussion of the case study clinical trainers ask the student specific questions related to the case study example they presented. At this time, the student engages in a discussion and oftentimes a debate over the validity of the information presented by the clinical trainer during

task performance. These case studies are completely discussion based and are not documented in any formal manner or retained as evidence of performance. College faculty and clinical education coordinators employed by the college are not aware of the impromptu case study utilization during clinical training, which can potentially pose learning goal and task performance objective alignment concerns, specifically if the student is assessed by college faculty in addition to their clinical trainers.

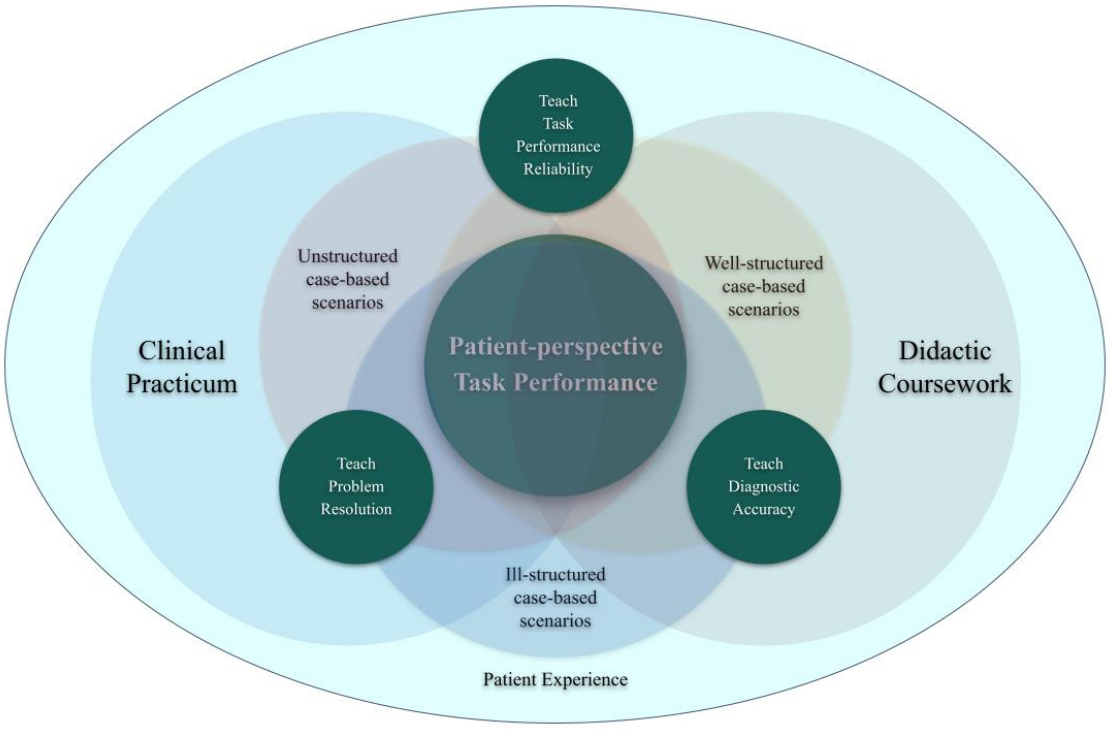
The study revealed that although patient experience design was not a purposeful consideration in the design of MLT curriculum, the concept is present in all coursework and clinical practicums using case-based learning and problem-based scenarios integrated within this instructional strategy. Three different types of case-based scenarios are used through student matriculation in the MLT program: well-structured case study scenarios, ill-structured case study scenarios, and unstructured case-study scenarios. Figure 7 graphically depicts the location of each strategy implementation within the MLT program. Through the individual and collective use of the instructional strategy, MLT students are taught how to deliver healthcare while focusing on patient experience and patient satisfaction.

Unstructured case-based instructional strategies create a constructivist learning experience, allowing the student to connect previously learned information with the current situation to derive meaning from it and arrive at decisions from it. This is the typical cognitive process utilized in healthcare, which is highly patient-focused and directed at meeting a need, specifically problem resolution. Bearman et al. (2018) present a case for patient-focused simulation as instruction for healthcare students and employees, whereby a constructivist approach is utilized in conjunction with real patient encounters to generate meaning associated with intended patient outcome. This authentic practice, using patients, is highly unstructured and

can serve to reinforce concepts, protocols, and tasks previously learned or being refined for workplace application (Bearman et al., 2018). Clinical trainers use this strategy with MLT students in the localized context in which their skill sets will be employed. An example of this instruction is the student encountering a malfunctioning piece of critical equipment. At this point, the student is required to troubleshoot the unexpected situation by accessing previously learning information related to both the problem and the instrument or diagnostic testing platform; the student is engaging in a problem-solving situation where meaning surrounding the problem is constructed as new information is uncovered during resolution task performance.

Figure 7

Creating Instruction for Patient-perspective Task Performance



Study Outcomes, Case-based Learning and HCAHPS

The study revealed that student clinical training resources may not be purposefully designed with the intent of explicit training in patient experience education or how to perform tasks that affect the patient experience. However, findings also showed that, although not explicitly stated, patient experience considerations are taught to students using certain instructional strategies such as modeling, student task performance, student reflective practice, and case study scenario inclusion and review in both didactic and clinical education phases. Collectively, these three findings demonstrate the way students learn how their work performance directly impacts patients, thus impacting the student's overall experience. Additionally, findings indicate that various aspects of clinical training serve to support and promote the understanding and application of the several domains of the HCAHPS evaluative instrument utilized by CMS to examine the overall patient satisfaction associated with the healthcare organization.

There are nine domains (CMS, 2021) associated with the HCAHPS patient satisfaction survey. These domains can be categorized into three overarching themes: communication of care, environment of care, and patient satisfaction (Table 8). Examination of PPTP in relation to these HCAHPS categories demonstrates that the concept of patient satisfaction, specifically assessed patient satisfaction, can be taught through instructional methods, strategies, and activities purposefully aligned to clinical learning objectives and the HCAHPS survey instrument.

Table 8

Domains of HCAHPS Patient Satisfaction Survey

Category	HCAHPS Domains	PPTP
Communication of Care	Physician communication Nursing communication Medication communication	Case study inclusion of diagnostic accuracy
Environment of Care	Staff responsiveness Clarity of information at discharge Cleanliness of facility Facility noise control	Case study inclusion of task performance accuracy and reliability
Patient Satisfaction with Care	Likelihood to recommend facility Overall patient satisfaction	Case study inclusion of problem resolution

Case-based Learning for Diagnostic Accuracy

The right result, at the right time, for the right situation provides healthcare providers with the aligned diagnostic snapshot of the patient's in vivo status. Timeliness of order placement, sample collection, test performance, and result reporting all contribute to communication between the laboratory, nursing, and attending physicians. Without accurate results, accurately focused to the current need of the patient, communication of care cannot be achieved with a high degree of accuracy and subsequent patient outcome result. Through the implementation of patient instructional scenarios, both well and ill-structured, MLT students can connect the impact their work has upon communication of care delivered by healthcare professional with direct patient contact. While well-structured cases present the ideal situation – one that is the most desired – ill-structured cases can demonstrate scaffolded, authentic situations that the MLT encounters daily. In these ill-structured scenarios, students can learn to draw on

previously learned, vital information that may be missing from the case; this serves to reinforce critical information related to the associated task. By learning with both examples, MLT students gain a deeper understanding of the impact their work performance exerts on the overall communication that transpires between indirect and direct care givers and the affected patient.

Case-based Learning for Task Performance Accuracy and Reliability

Getting the right sample result is the goal of the MLT, but obtaining that result accurately and reliably is, above all, the ultimate goal of diagnostic test performance. If getting the correct result takes an extended length of time and results in a potentially compromised testing methodology, the correct result is far from effectively diagnostic. Extended result turnaround times, delayed collection, and incorrect test orders lengthen reporting time of the vital information clinicians need to treat patients. This impacts the environment of care patients experience. Whether the environment includes the patient obtaining discharge information or further prognostic testing, delays in task performance impact the satisfaction patients define as related to their care. Through the use of well and unstructured case studies, MLT students can examine preanalytical, analytical and post-analytical phases of test performance that may serve to negatively affect the environment of care patients received surrounding the collection, testing, and reporting of diagnostic testing. While the well-structured case studies present the optimal example, the unstructured cases provided real patient examples, often synthesized in real time, that allow the MLT student to explore potential reasons the task performance affected the outcome. A continuous reflection on the unstructured example can serve to expand the student's mental models of task performance examples, aiding in problem mitigation and performance improvement while also teaching how the lab impacts the patient's environment of care.

Case-based Learning for Problem Resolution

Differentiating well-structured from ill-structured case studies and problem-based learning strategies, Jonassen (1997) states,

> Well-structured problems are constrained problems with convergent solutions that engage the application of a limited number of rules and principles within well-defined parameters. Ill-structured problems possess multiple solutions, solution paths, fewer parameters which are less manipulable, and contain uncertainty about which concepts, rules, and principles are necessary for the solution or how they are organized, and which solution is best (p.65).

Mastering a basic understanding of the ideal task performance example is critical to achieve accuracy and precision in performance; however, expectation of uncertainty, variation in choice, and inevitable constraints drives the need for ill-structured instructional strategies to be an integral component of healthcare training. Utilization of both well and ill-structured strategies should be achieved through a scaffolding, purposeful approach so as not to confound the learner with extraneous information that may only subvert the learning process (Jonassen, 2011; Kostousov & Kudryavtsev, 2017; Van Merriënboer et al., 2002; Van Merriënboer et al., 2003). Collectively, this approach to task performance is reflective of work performed within a clinical laboratory and is descriptive of experiential learning (Abdulwahed & Nagy, 2009; Kolb & Plovnick, 1974).

Almost everything in healthcare is rooted in correcting problems. It is because of this that there is an importance to teach problem resolution to the MLT student. Patients bring the problems to the healthcare entity for resolution; they do not expect that part of their healthcare,

diagnosis, or specific situation can create problems for the healthcare professionals attending to their physiological needs. Correction of the patient's problem feeds directly to their overall satisfaction with their experience with the hospital or healthcare facility. Creation of problems while patients are admitted contributes to this as well. Teaching with problems helps MLT students learn how to respond and react when similar patient situations are encountered in the workplace. Ill-structured and unstructured case studies can teach problem resolution by guiding the student to draw from previously mastered information associated with the problem. For example, if the student previously learned that all coagulation testing must be collected as a whole blood sample, when presented with an ill-structured case study that fails to state a clotted sample was tested, one of the main questions that should be asked during problem resolution is what type of sample was collected. In the ill-structured case study, the omitted information is general critically necessary information that should have already been mastered by the MLT student. This critical information applies to all patient examples presenting with the same type of testing. Omission of this specific step would halt all testing performance regardless of patient.

HCAHPS and PPTP

The implications of PPTP to HCAHPS outcome measures are significant. Instructing students from the perspective of the patient can only serve to mentor pre-service healthcare professionals to exercise and integrate a higher degree of customer service within their daily workplace tasks. Clinical laboratory professionals who execute tasks with a greater focus on the patient will extend their impact to the direct care provided at the patient's bedside. This indirect impact affects communication pathways, the healing environment, and the overall satisfaction hat patient exhibits with the care received.

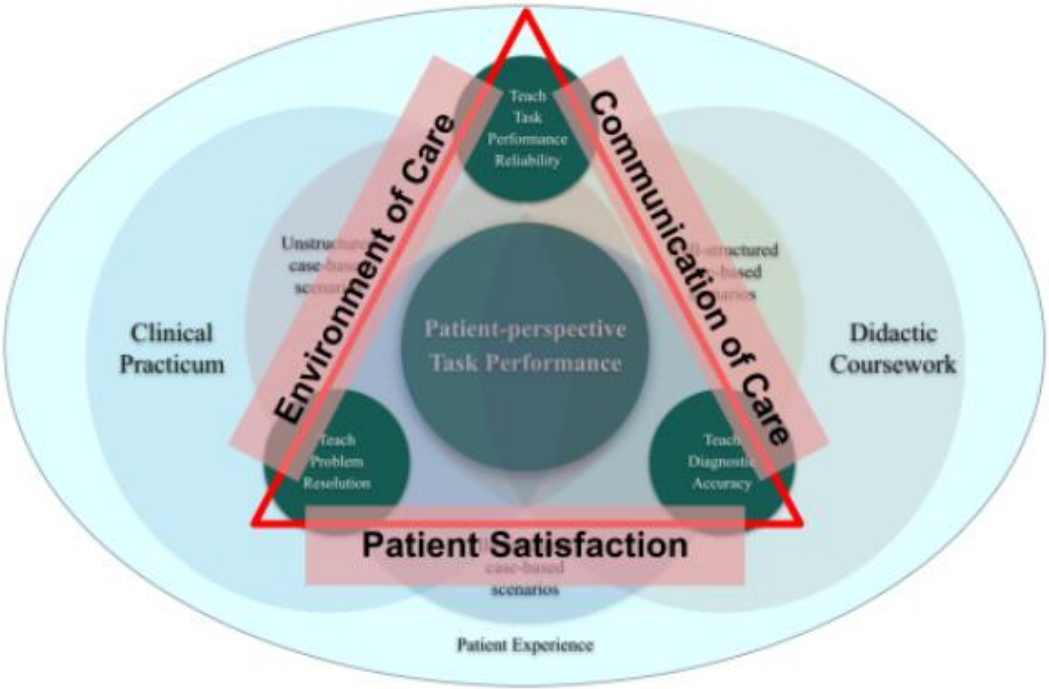
Aligning PPTP to HCAHPS can be achieved by examining the three main domain classifications of the survey instrument: communication of care, environment of care, and patient satisfaction of care. The PPTP model directs instruction to support and promote diagnostic accuracy, task performance accuracy and reliability, and problem resolution, all three being critical components that promote effective and efficient patient care.

Employing the PPTP in to Promote HCAHPS

There are three areas within the PPTP model that promote inclusion of HCAHPS domains. Figure 8 provides a depiction of where they HCAHPS domains reside within the framework.

Figure 8

PPTP Model Aligned with HCAHPS Domains



From the patient's perspective, they want accurate care that resolves their medical necessity and urgent health needs. Patient overall satisfaction with healthcare experience can be

distilled to these two basic topics. To meet this expectation, healthcare professionals must consistently resolve problems and provide a high degree of diagnostic accuracy in the process. Therefore, it can be stated that when patient problems are resolved through accurate results, patients will be satisfied with the associated care and services received.

Along with patient satisfaction, the environment of care in which the patient receives treatment and service is critically important and directly linked to problem resolution and diagnostic performance reliability. Accuracy is nothing without reproducibility, and a lack of reproducibility results in an unreliable healing environment, one that can be described as highly dissatisfying.

Tying the together the domains of HCAHPS and the PPTP framework, communication of care brings together accurate, reliable results obtained and used at the right time and for the right intent. Provider, nursing, and allied health communication are all dependent upon each other if the goal is accurate, reliable care that meets, or exceeds, patient expectations.

Building a Case Study with the PPTP Framework. Setting out to design a case-based scenario using the PPTP framework begins with the HCAHPS domain. The first determination that should be made is which component of the HCAHPS survey will the outcome of the case study impact regarding patient experience. If the domain is more aligned to the environment in which the diagnostic results are utilized, then an unstructured to ill-structured case study would likely be a more impactful learning resource to the MLT student. However, if communication of results is the primary focus, then the well-structured case study will yield a greater degree of learning, since the focus is reproducible accuracy. An example of case study design using the PPTP framework can be observed in Table 8.

Table 9

Using the PPTP Framework.

Intent	HCAHPS-PPTP Alignment	Case-based Focus
Teach diagnostic accuracy	Communication of Care and Patient Satisfaction	Case study should focus on highly accurate performance of the task – use a well-structured problem for the scenario.
Teach task performance accuracy and reliability	Communication of Care and Environment of Care	Case study should focus on highly accurate performance of the task amid a typically encounter problem – use an ill-structured problem for the scenario.
Teach problem resolution	Environment of Care and Patient Satisfaction	Case study should focus on an uncommonly encountered problem – use an unstructured example for the scenario.

Based upon these recommendations, it should be noted that a scaffolding approach should be taken when implementing structured and unstructured case studies. The MLT student must have experience with and master the use of well and ill-structured case studies, and in that order, prior to engaging with an unstructured scenario. Within the realm of complex learning, parts of the whole task must be confidently mastered before progressing to the complicate aspects of the task (van Merriënboer et al., 2002).

Study Implications

Implications of this study can extend to both the continued research of MLT student clinical training, as well as the immediate practical application of various strategies within MLT training programs across community colleges in the United States. Additionally, the general application of this information can be applied to other allied health science curricula that include

clinical training practicums. Research extension of this study includes the bridging of didactic instruction and clinical training for the purpose of patient-perspective task performance instructional frameworks, iterative instructional strategies that produce the outcomes of habituation and automaticity, and refined, advanced student task performance through the mitigation of workplace and patient problematic situations. Further extension of this research should include a deeper examination of how to design case-based patient scenarios through the use of the PPTP model in conjunction with the HCAHPS survey instrument.

Continued Research of MLT Student Clinical Training

Supported by the model produced in this study, extension of research can include guided revision of MLT program structure and clinical training curriculum, integration of unstructured case studies by non-faculty trainers, and systematic instructional design of structured and unstructured case studies specific to program learning objectives. The researcher possesses the unique opportunity to engage in ethnographic research with both MLT students, faculty and non-faculty clinical trainers employed by hospital clinical affiliates. Engaging in immersive research opportunities as both MLT faculty, program director and researcher provides readily available access to study participants and the opportunity to isolate specific components of the design and development process of these case studies.

An ethnographic examination of an MLT program holistically implementing case-based learning, structured and unstructured would provide insight into how faculty, students, and trainers create, use, and view the case study as a primary instructional strategy throughout matriculation. Several questions arise, for example how are faculty trained to use the case study format, what are the students' opinions of case study utilization in comparison to other instructional strategies, and when should each type of case study structure be implemented for

maximum effectiveness in learning achievement and mastery of learning objectives. Outcomes of this study could provide further implications related to a fine focused implementation process aimed at customizing instruction for each MLT student enrolled in the program.

An immediate use of this information can be easily observed in the framework and model. Specifically, scaffolding case studies from well-structured to ill-structured to unstructured, in clinical training, will serve to produce a layered approach to expanding student knowledge base in the mastery of highly complex learning tasks. This is especially of great importance when the MLT is performing highly critical, technical workplace tasks such as blood typing, bacterial identification, and troubleshooting of instrumentation errors. Without a foundational knowledge well-structured case studies can aid in establishing, students are not able to conceptually connect current, aberrant workplace problematic situations with the procedurally correct situation that will result in correct task performance and ultimately accurate, reliable patient result reporting. Engaging in case studies that demonstrate the ideal task performance, the reality of task performance, and problematic task performance serves to cognitively prepare learners to meet challenges faced in the workplace and work through these problems in a systematic, efficient manner.

Although this study examined only the MLT allied health science curriculum, other allied health science programs can find benefit from the conceptual framework and PPTP model presented in this study. Because all healthcare tasks share the commonality of problems arising throughout various stages and steps of task performance, structured and unstructured case studies can add value to all clinical training regardless of health science modality. Each patient is different and brings with them different challenges healthcare professionals must navigate; this is problem resolution in light of accurate task performance, which can be taught through these

forms of case studies. We would be wise to not implement an unstructured case study at the initial presentation of a clinical topic or patient care strategy; this would result in confusion and potentially a negative learning experience for the students. Rather, we would present the unstructured case study after students have navigated case studies that are pristine examples and examples that lack all specific components needed for resolution. The unstructured case study would be most useful during clinical training and implemented by clinical trainers who are not college faculty. All health science students engage in these clinical training practicums, and each day of training is a real-time work-based example of the ideal, less than ideal, and problematic patient examples. Case-based learning, from the beginning of an allied health science program through the end of clinical training, can reinforce knowledge base and skill sets and refine task performance in the student.

Bridging Didactic and Clinical Training Experiences

As evidence suggests, rich case studies are an integral part of healthcare professional education and training. Having worked through case studies as a formal component of classroom instruction and lab practice, students learn how to utilize the strategy in conjunction with diagnostic testing results to arrive at the correct application of in vitro lab values. Extension of this case study integration strategy, students also work with highly relevant, real-time cases during their clinical practicums, whereby clinical trainers present scenarios that directly align with results obtained by students and for patients. Although rarely purposefully structured, these scenarios represent the systematic process of connecting relevant patient information with specific testing and test results, demonstrating their diagnostic purpose and confirmatory application as utilized by providers.

By bridging didactic case studies to clinical training scenarios, thereby creating each to purposefully connect with the other, both college faculty and clinical trainers can design much more highly focused instructional examples during student clinical training. This has the potential to magnify the information students acquired during their didactic coursework, resulting in a stronger set of job entry skills upon completion of the degree program. Future research into the alignment of classroom and practicum cases studies will be of great value to this field of health sciences education.

Patient-perspective Task Performance Instructional Frameworks

Although there was no systematic, purposeful integration of patient experience design within the specific MLT curriculum associated with this study, there was triangulated evidence that students are instructed about patient experience and patient satisfaction in relation to their job performance. By joining patient experience design with authentic examples of knowledge application during both classroom and clinical instruction, community college faculty can design learning experiences that bring the patient into the forefront of all instruction. Although teaching empathy is virtually a near impossible task within the affective domain, modeling empathic behavior is not and can be achieved by the learner through practice, refinement, and iteration.

Teaching Habituation and Automaticity through Error Mitigation

Habituation comes with refined practice, and automaticity is established with task performance habits that are accurate and seamlessly performed under the right circumstances and for the correct indications. Iteration of task performance in response to encounters with problems is one of the most effective strategies used to scaffold the learning to habituation and subsequent automaticity. It is the responsibility of the college faculty to systematically generate learning opportunities that integrate potential problems in task performance; this, in return, generates

mitigation strategies to arise within the learner that can be applied to prevent problems from becoming testing errors and thus producing less than desirable outcomes for the patient.

Application for Clinical Training

Most importantly, information from this study can be immediately utilized and implemented by MLT educational programs at community colleges, with the goal to enhance the clinical training experiences of the MLT student. Program faculty and clinical instructors can find this information resourceful when making the decision to design and implement case study scenarios as instructional strategies. Through use of authentic and relevant situations, often created in real-time and with real data, will find them impactful in teaching the student how their work impacts the patient's healthcare experience. Additionally, when MLT program faculty, clinical trainers, and students realize that all instructional information, both didactic and clinical, is interconnected and bidirectionally supportive, reinforcing the knowledge generated within the student.

Because clinical trainers are more often not formally trained educators or previously employed as faculty in MLT programs, clinical trainer instruction on the creation of real-time relevant case studies would be an important component of building these employees up to a point where they can effectively instruct students. Training on the creation of case study, followed up by the consistent development of all case studies, will ultimately aid in controlling the cognitive load experienced by the student, both in extraneous and germane information applied to the strategy.

Limitations and Future Research Considerations

Several limitations should be considered in this study. Because this research was conducted during the COVID-19 pandemic, the researcher was unable to conduct all planned

data collection events. Rather than the study including two focus groups, one at the beginning of the study and another at the completion, only one was held. This happened because the healthcare professionals participating in the focus groups were unable to attend due to staffing shortages and laboratory workload. The impact of the exclusion of the initial focus group has little impact on the outcome of the study; the researcher refined the focus group to include most topics and questions that were to have been used in the first focus group meeting.

A second limitation of this study is that laboratory employees who may or not be clinical trainers were not included in this research. Oftentimes, more than one laboratory employee will participate in the training of students, rarely is only one clinical trainer assigned to a student. If other laboratory employees had been included in this study, more information could have been gathered about unstructured case studies and how they are presented to the student.

The inability to conduct observational studies of the student's clinical training experience is another limitation of this research. Restrictions surrounding COVID-19 and nonessential individuals entering the clinical training location prevented the researcher from gathering this observational information, which could have shed more light on unstructured case study use in training.

Lastly, this study followed the student throughout one semester and two clinical rotations taking place during 12 consecutive weeks. Prior to starting this semester, the student had already completed one full 16-week semester of clinical training in the fall of the previous year. This means that the student already had a general understanding of what to expect during her training rotations; however, each semester was completed at different clinical laboratories, which resulted in a new experience for the student at the beginning of this study.

Future research in MLT student clinical training has the potential to become expansive. The PPTP model that comes from this research is an evolving framework and has not been validated as effective in creating scaffolded case studies to hone PPTP; future exploration into the framework should include testing the components of the model to applicability to the intended purpose.

In comparison to other healthcare training programs and curricula, clinical laboratory science has had little impactful research conducted that can be used to improve the quality of training students receive in the classroom and in clinical practice (Miller, 2014). This current study suggests several future research opportunities into the use of patient experience and clinical laboratory science curriculum design. Considerations include a framework for scaffolded case studies designed to promote critical thinking and problem resolution, the design and delivery of unstructured case studies in clinical training, student performance in comparison to the use of systematically designed case studies, the unconscious inclusion of patient experience with clinical training, and clinical trainer education in the design, development, and implementation of case studies in clinical training.

Conclusion

Information learned from this study indicates that although MLT program curriculum may not include a purposeful design step to include patient experience design considerations as part of general course content, types of instructional strategies used in didactic and clinical phases of the MLT program teach students this concept. Specifically, case-based scenarios created as well-structured, ill-structured, and even unstructured examples, are implemented in pre-clinical courses and clinical training. While the main instructional strategy teaching patient experience in pre-clinical courses is the well-structured case study, the unstructured case study is

the predominant instructional strategy used in the clinical training. Ill-structured case-based scenarios are used in both didactic and clinical instruction and are used to either reinforce learning or set the stage for more advanced problem resolution skill set development.

Future exploration into how these case-based scenarios are designed will provide more knowledge into how both didactic and clinical MLT training are designed for their aligned inclusion. This can lead to further support and promote positive patient experiences and better outcomes on HCAHPS surveys in healthcare as a result of laboratory personnel practicing patient-perspective task performance for all tasks executed in the clinical laboratory.

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APPENDIX A

Focus Groups

Instructions: This tool should be used by the researcher to conduct and document facilitation of Focus Group 1 and Focus Group 2. The completed resource should be stored as explained in the study methodology, and transcripts should be drafted within 24 hours of focus group completion. Use the data collection device label as its respective focus group.

Date and Day of Focus Group: _____

Location of Focus Group: _____

Focus Group Participants and Title:

_____

_____

_____

Transcription made within 24 hours. Yes ___ No ___ Date, time: _____

Focus Group Facilitator: _____

Focus Group 1: Pre-clinical Training

Using the following questions and probing questions, moderate discussion of MLT student clinical training considering patient experience. Begin by reading the following information and instructions to the group.

“Thank you for agreeing to participate in this voluntary research study. The purpose of this study is to explain how MLT programs at US community colleges design clinical training experiences to include considerations for patient experience and patient satisfaction. As you may know, patient satisfaction scoring at hospitals and healthcare institutions is a driving quality improvement measure that impacts all organization departments. Because human interaction is one of the foundational elements which contributes to a patient’s experience, it is important to examine how colleges train students of healthcare programs on this topic, and often the most impactful portion of this training is during the clinical experience. For the MLT student, patient interaction is minimal, so it is of vital concern to understand how healthcare workers who do not have direct patient contact work to contribute to a positive patient experience. This discussion

should last only about 30-45 minutes, and you are encouraged to be very candid and safe to share your own personal experience and opinions. At the end of the 12-week rotation, we will convene again to conduct a second discussion to uncover how the clinical training experience went for the student and the laboratory. Please know that at any time you can withdraw from participation and that all the information shared in this discussion is confidential and protected by research guidelines established by Old Dominion University. To ensure accuracy of information shared, this discussion will be recorded, and transcripts will be drafted of your comments. After transcript approval, the recording will be destroyed. Your name or identifying information will not be used. Thank you for your participation and your ultimate contribution to this important work. Let us start by introducing ourselves. Please share your name, your current role, and anything other information that you would like to share with the group."

After the participants have introduced themselves, begin prompting discussion by using the questions below.

1. If I were to ask you to explain your opinion of the meaning of patient experience, what would you say?
    a. Prompting questions to use if needed
        i. Would you think it is related to direct care?
        ii. Would you say it is based on one singular patient encounter?
2. How do students in clinical training affect patient experience, specifically MLT students?
    a. Prompting questions to use if needed
        i. Is it just those students that work in the presence of the patient?
        ii. Do students even need to consider patient experience?
3. How are students trained on patient satisfaction measures and expectations during their clinical rotations?
    a. Prompting questions to use if needed
        i. Is this instruction they should receive before they start clinical training?
        ii. Should students understand patient experience and patient satisfaction before they begin clinical training?
4. Thinking about the expectations you have of the upcoming clinical training rotation period, what are your plans for including specific instruction and instructional strategies on how patient experience is promoted by the work performed in the clinical laboratory and during practical training?
    a. Prompting questions to use if needed
        i. Is this a topic that you usually include in your training plans?
        ii. Is this something that is ever-present during the student's clinical rotation?
        iii. As a student/lab director/clinical trainer/program director, how do you view this?

5. Thinking about any training material clinical trainers use during student training, what formal resources are provided by the college and what resources would you like to have the college provide?
    a. Prompting questions to use if needed
        i. Do you find checklists useful?
        ii. Are there specific resources you would like to have that are provided by the MLT program?
        iii. Do you ever use previous instructional material that is not from the college?
6. Imagine the following scenario. You are a clinical trainer, employed as an MLT in a clinical laboratory, and on Monday, you will start training a new MLT student from the college. You are planning to work with the student in your main hematology lab that day, and on Tuesday, you plan to take her to your Oncology lab which is across the street in the medical office building. How do you adjust your instructional strategies between the two labs while still focusing on patient experience considerations in both locations?
    a. Prompting questions to use if needed
        i. Do you view the patient populations as the same?
        ii. Do you have a different workplace practice in each lab?
        iii. Imagine there is direct patient contact in the Oncology lab, is the training different because of this?
7. Is there any further information anyone would like to share about this topic?

Thank the participants for their time and remind them that you will contact them soon for a brief individual interview about the same topic. Also remind them that for their participation in the focus group you will enter them in a drawing for a free annual subscription to MediaLab's web based LabCE. Tell them that if they have any questions about this focus group or about the study to contact you at your contact phone number or your email address.

Date and Day of Focus Group: _____

Location of Focus Group: _____

Focus Group Participants and Title:

_____

_____

_____

Transcription made within 24 hours. Yes ___ No ___ Date, time: _____

Focus Group Facilitator: _____

Focus Group 2: Post-clinical Training

Using the following questions and probing questions, moderate discussion of MLT student clinical training considering patient experience. Begin by reading the following information and instructions to the group.

"Thank you for agreeing to participate in the second focus group of this voluntary research study. As a reminder, the purpose of this study is to explain how MLT programs at US community colleges design clinical training experiences to include considerations for patient experience and patient satisfaction. This discussion should last only about 30-45 minutes, and you are encouraged to be very candid and safe to share your own personal experience and opinions. At the beginning of this 12-week rotation, we will begin by discussing your expectations of the clinical training rotation in conjunction with patient experience. Today, we will talk about how patient experience considerations were incorporated into the clinical training experience. Please know that at any time you can withdraw from participation and that all the information shared in this discussion is confidential and protected by research guidelines established by Old Dominion University. To ensure accuracy of information shared, this discussion will be recorded, and transcripts will be drafted of your comments. After transcript approval, the recording will be destroyed. Your name or identifying information will not be used. Thank you for your participation and your ultimate contribution to this important work."

After the introduction has been read, begin prompting discussion by using the questions below.

1. Let us talk about how clinical training went! Does anything specific come to mind that was really a significant instructional moment? One that you will remember for the rest of your career.
    a. Prompting questions to ask if needed.
        i. Did you have any aha moments that connected to your classroom instruction?
        ii. Did you learn anything significant lessons that you would not have expected to learn?
2. If I were to ask you to explain your opinion of the meaning of patient experience now, what would you say?
    a. Prompting questions to use if needed.
        i. Would you think it is related to direct care?
        ii. Would you say it is based on one singular patient encounter?

3. Thinking about the training experience, how did the tasks taught and learned affect patient experience?
    a. Prompting questions to ask if needed.
        i. Does the work on the clinical laboratory workbench directly impact patient care?
        ii. What aspects of training were impactful to affect patient experience?
4. How was patient experience included within the clinical training experience?
    a. Were there discussions about patient experience and the lab work performed?
    b. Was there any specific documentation used to train about patient experience?
5. What specific instructional strategies were seemingly beneficial in helping the student understand the connection between clinical lab science and patient experience?
    a. Prompting statements to use if needed.
        i. Define instructional strategy.
        ii. For example, what specific tasks did the clinical trainer do to help the student understand the information more effectively?
6. What training resources were used during the clinical rotation and how was patient experience connected to them?
    a. Prompting statements to use if needed.
        i. For example, the HCAHPS website could be used to help students learn more about how patients are surveyed after their hospital encounter. This would be a training resource.
7. Imagine this scenario, there are two MLT students being trained in one laboratory department. The clinical trainer is instructing both students on how and why the lab reports turnaround time data to the Quality and Safety department on a monthly basis. Student 1 asks Student 2 why reporting Outpatient turnaround times matters to a hospital system when really all we need to worry about monitoring are STAT tests. How would you respond to that question?
    a. As a student
    b. As the clinical trainer
    c. As the lab director
    d. As the MLT program director
8. Is there any further information anyone would like to share about this topic?

Thank the participants for their time and dedication to the completion of this study. Add their names to the drawing for the annual subscription to MediaLab's web based LabCE and randomly draw the winner. Present the winner with the subscription by emailing the purchasing information directly to the participant. Thank them one last time and tell them that if they have any questions about this focus group or about the study to contact you at your contact phone number or your email address.

APPENDIX B

Interview Questions

Instructions: Use the following questions to guide interviews with the students, clinical trainers, and community college faculty who design clinical training materials. Based upon the individual being interviewed, choose the correct question to ask. All questions are aligned to their intended purpose.

Pre-clinical Training Interview Guide

Question Topic	Student	Clinical Trainer	College Faculty
Context of Instruction	Explain your experience with this program to this point. What specifically stood out in your classroom instruction?	What information do you expect MLT students to have at the beginning of clinical training? Pipetting, hand hygiene and Westgard Rules are examples.	Explain how your MLT students are instructed during the classroom training portion of their program.
Curriculum	Explain how you have used the training resources your teachers provide you when you are performing tasks specific to the topic of your coming clinical rotation and on any given patient sample. How do these resources help you care for your patient?	Thinking about how you train the students, what manner of support do you expect to receive from the college regarding instructional materials, checklists, or guidance?	How do you prepare clinical training materials that will be used by the clinical trainers and students during their clinical experience? For example, what information does your program give to the clinical trainers to use or follow?
Training Process	Up to this point, you have not started your training related to the topic of your pending clinical rotation. What are your expectations about working with a diverse population of patients?	How do you prepare for a new student clinical training experience? How does the college or college resources assist you in preparing for their clinical training?	How do you ensure that the training materials designed are specific for the intended purpose of use at the clinical training site and for the patient population of that site?

	Inpatients/Outpatients, neonates/geriatric, healing/dying. etc.		

Midterm of Clinical Training Interview Guide

Question Topic	Student	Clinical Trainer	College Faculty
Context of Instruction	Tell me about your training thus far. What instruction has your trainer provided that has helped you work with your patients?	Thinking about the instruction you have provided the student over the past month; what information was relevant and what information was not needed regarding providing diagnostic testing services to the patient?	Describe how your training materials prepare the student to perform diagnostic testing procedures for various patient types and patient conditions.
Curriculum	Thinking about your classroom instruction and your clinical training, tell me some similarities and differences you have experienced in your training to be an MLT. Specifically, think about how you interact and work with patients.	Based upon the student's performance to date, what evidence can you find that shows the student's classroom instruction prepared him/her to interact with patients? And how has the student interacted with patients?	What is your standard process for assessing students during their clinical training experience? Does this process include an assessment on how the student interacts with patients?
Training Process	Thinking about your clinical trainers, what is your opinion of their training process and how they have been teaching you when you are working with patients and patient samples?	How do you train students to engage with patients when they face to face interaction?	How do you ensure that the training materials designed are specific for the intended purpose of use at the clinical training site and for the patient population of that site?

Completion of Training Interview Guide

Question Topic	Student	Clinical Trainer	College Faculty
Context of Instruction	Explain how your classroom instruction and your clinical instruction prepared you to interact with patients and perform diagnostic testing on their specimens.	Tell me about your experience with the student, the clinical training materials, and the student's interaction with the patients. How could you determine that the student was ensuring that the patient perspective was considered throughout any given event or procedure?	What is your process for assessing student understanding and inclusion of patient experience and satisfaction after clinical training has been completed?
Curriculum	Thinking about both your classroom instruction and your clinical training experience, discuss the difference and/or similarities between the two regarding your understanding of patient experience and the tasks you perform.	Thinking about how you train and how you use the training materials provided by the college, explain how effective those training materials are for student instruction, specifically when the student is in the presence of a patient?	What is your process for evaluating clinical training documentation to ensure that student training in patient satisfaction and patient experience are included in your curriculum?
Training Process	How were you trained, at the clinical site, to be aware of patient satisfaction before, during, and after diagnostic testing performance?	How do you train students to engage with patients if needed?	Thinking about how you determine information students will learn during their classroom and clinical training experience, how do you revise curriculum to adjust to changes within clinical sites and as related to direct patient care?

APPENDIX C

Field Note Template

This template will be used in conjunction with Appendices A and B and is intended to aid in the observation and documentation of participant reactions and other observations throughout the focus group and interview processes. Ensure that the date, day and location of observation is included in the field notes, as well as participant unique identifiers (for the purposes of promoting reflection).

Topic/Aspect	Observation
What type of reaction did the participant have to the questions?	
How eager/open did the participant seem with regards to providing information?	
What was the participant's response when asked to provide a resource example for review?	
What concerns did the participant have regarding document review?	
Was the interview relaxed or tense?	
How did the interaction with this participant differ from the reaction experienced with other participants?	
How long did the interview take to complete?	
What questions did the participant ask throughout the interview?	

APPENDIX D

Document Review

Examples of documents/resources that should be reviewed: instructional and non-instructional resources; new employee department-specific training products; general hospital orientation training products.

- Name of the document or resource being reviewed:

  _____

- Date of creation: _____
- Is the document or resource used as paper-based or digital? | Paper-based | Digital
- Intended purpose of the resource:

  _____

- Instructional or non-instructional? | Instructional | Noninstructional
- Review the document, specifically examining the resource for indication of contextually relevant information, customization for varying learner needs and characteristics, and inclusion of holistic education on the intended learning outcomes and purpose of training.
- Review the document/resource and examine it for the integration of patient experience consideration within the specified context of use and how that is directly associated with the purpose and aim of the intervention. Describe findings in detail following the eight HCAHPS dimensions (Appendix F).
- Review the document/resource and examine it for the integration of patient experience consideration and how that is directly associated with trainee reflective practice of associated learned tasks. Describe findings in detail following the eight HCAHPS dimensions.

Note: The HCAHPS dimensions are communication with nurses, communication with physician, staff responsiveness, pain management, communication about medication, discharge information, cleanliness and quiet environment, overall experience with the hospital

APPENDIX E

Codebook Template

This template should be used to capture primary and secondary codes that emerge from data analysis. After coding completion, this template should be used to create primary and secondary codebooks that will be retained with all study documentation.

Primary/ Secondary	Code	Code definition	Frequency

APPENDIX F

9 Key Areas of HCAHPS

This resource should be used in conjunction with data collection instruments within this study. The purpose is to provide guidance to the researcher during all data collection events, surrounding patient satisfaction focal areas.

	CMS Key Area	Explanation
1	Communication with Nursing	Patient satisfaction with communication provided by the nursing staff during the encounter.
2	Communication with Physicians	Patient satisfaction with communication provided by the attending physician(s) during the encounter.
3	Communication about medication	Overall explanation and information provided about the medications administered through the encounter, including medical necessity, dosing, frequency, and other expectations such as positive outcomes and potential side effects.
4	Responsiveness of hospital staff	Overall opinion of how responsive the hospital staff was to the needs of the patient.
5	Pain Management	Adequate and sufficient management of pain throughout the patient encounter.
6	Cleanliness and quietness of hospital environment	Opinion of the hospital environment and cleanliness of the entire facility throughout the encounter.
7	Discharge instructions	Clarity and thoroughness of discharge instruction delivery upon completion of encounter.
8	Overall rating	Overall, comprehensive rating of the patient experience during the encounter.
9	Likely to Recommend	Overall likelihood that the patient would recommend the healthcare entity to others.

APPENDIX G

Informed Consent

Informed Consent Document

Old Dominion University

PROJECT TITLE: Patient-Perspective Task Performance: Creating Contextually Relevant Student Clinical Training Through the Use of the Patient Experience

INTRODUCTION:

The purposes of this form are to give you information that may affect your decision whether to say YES or NO to participation in this research. This project, entitled Patient-Perspective Task Performance: Creating Contextually Relevant Student Clinical Training Through the Use of the Patient Experience, is being conducted by Candice Freeman, M. Ed, Doctoral Candidate in the Instructional Design and Technology Ph.D. program.

RESEARCHERS:

Candice Freeman, M.Ed., Responsible Principal Investigator, Doctoral Candidate, Instructional Design & Technology Program, College of Education and Professional Studies, Department of STEM Education & Professional Studies, Old Dominion University

John Baaki, PhD, Dissertation Committee Chair, Assistant Professor, Instructional Design & Technology Program, College of Education and Professional Studies, Department of STEM Education & Professional Studies, Old Dominion University

PURPOSE OF RESEARCH:

The purpose of this study is to examine how Medical Laboratory Technology (MLT) associate degree programs at public community colleges design student clinical training experiences that make meaningful considerations for the patient experience and patient satisfaction. The overall goal of this study is to explain how healthcare student clinical training is created to include patients as primary stakeholders and secondary end users of information learned by healthcare professionals. This information will be used to provide recommendations and guidance on the systematic instructional design process for a variety of clinical training programs at public community colleges and institutions of higher learning where healthcare training programs are offered.

The researcher will use the following research questions to explore how students engage in an empathic design approach.

1. How is an MLT student clinical training curriculum designed to integrate considerations for patient experience and patient satisfaction?

2. What instructional strategies are used to ensure the MLT clinical student is educated about patient experience and patient satisfaction?
3. How does a MLT program align curriculum to the context of the student training environment, specifically related to patient experience?

WHAT YOU WILL DO:

Study participants will engage in interviews and focus group sessions facilitated by the Project Investigator. Three interviews will take place over a 12-week period, and two focus groups will be moderated - one at the beginning of the study and one at the conclusion. These discussions will take place through scheduled Zoom online meetings at the participants scheduling convenience. The approximate interview time will be 30 minutes, and the focus groups will take place over a 30-45 minute period.

EXCLUSIONARY CRITERIA:

To participate in this study, you must be either a Medical Laboratory Technology student currently enrolled at one North Carolina Community College, a faculty member of the same college, or a hospital clinical trainer who teaches, or can teach, students enrolled in this program.

RISKS AND BENEFITS:

RISKS: There are no known risks currently to participate in this study. As with any research, there is some possibility that you may be subject to risks that have not yet been identified.

BENEFITS: You will be able to reflect on your experience as a current or future healthcare professional and provide valuable feedback on the design of student clinical training in hospital clinical laboratories. Your contributions may help shape future research in empathic design as it relates to instructional design.

PRIVACY AND CONFIDENTIALITY:

All study responses will be considered private and confidential. They will not be linked to participant name(s), teams, or other directly identifiable information. For the purposes of official reporting, conference proposal(s), presentations, and/or publication, participant data will be reported in aggregate and/or by the assigned alphanumeric identifier or pseudonym. All research materials, including recordings, transcripts, and field notes, will be kept within a password protected electronic environment by the principal investigator. Additionally, all data will be stored for at least five years after the project closes. Five years after the conclusion of the study, the data (responses to the survey) will be destroyed. Records may be subpoenaed by court order or inspected by government bodies with oversight authority.

WITHDRAW PRIVILEGE:

It is OK for you to say NO. Even if you say YES now, you are free to say NO later, and walk away or withdraw from the study at any time. Your decision will not affect your relationship with the North Carolina Community College System or Old Dominion University. If the researchers find new information during this study that would reasonably change your decision about participating, then they will give it to you.

COSTS AND COMPENSATION FOR BEING IN THE STUDY:

As an incentive for participating in this study and for each incidence of participation in the interview and focus groups, your study number will be included in a randomized drawing for a $100 Amazon gift card to be awarded at the conclusion of the study. If you voluntarily withdraw from the study, you will still be eligible to participate in the drawing.

COMPENSATION FOR ILLNESS AND INJURY:

If you say YES, then your consent in this document does not waive any of your legal rights. However, in the event of harm, injury, or illness arising from this study, Old Dominion University nor the researchers are able to give you any money, insurance coverage, free medical care, or any other compensation for such injury. In the event that you suffer injury as a result of participation in any research project, you may contact Candice Freeman, Responsible Principal Investigator at cfree002@odu.edu or 910-995-9737, Dr. John Baaki, Dissertation Committee Chair, at jbaaki@odu.edu or 757-683-5491, Dr. Laura C. Chezan, current Chair of the Darden College of Education Human Subjects Review Committee at lchezan@odu.edu or 757-683-7055, or the Old Dominion University Office of Research at 757-683-3460 who will be glad to review the matter with you.

CONTACT INFORMATION FOR GENERAL QUESTIONS AND CONCERNS:

If you have any questions later on, please contact the responsible principal investigator, Candice Freeman at cfree002@odu.edu or 910-995-9737.

VITA

Candice L. Freeman, M.A.Ed., CETL, MLS(ASCP)BB
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Laurinburg, North Carolina 28352
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Mobile: 910-995-9737

Education

Doctor of Philosophy in Education
Instructional Design and Education Technology - Doctoral Candidate
Old Dominion University, Norfolk, Virginia

Research Interests:
Empathic design and learner engagement
Instructional Design and Faculty Development
eLearning and Distance Education
Digital Teaching and Learning in Underserved Populations
Situated Learning in Higher Education

Dissertation (in progress): Patient-Perspective Task Performance Creating Contextually Relevant Clinical Training through the Use of the Patient Experience (Anticipated defense date of August 2021)

Master of Arts in Educational Media and Instructional Design
Instructional Technology Specialist in New Media and Global Education
Appalachian State University, Boone, North Carolina 2015

Instructional Design Intern
Central Piedmont Community College, Charlotte, North Carolina 2015
Professional development/Instructional Design focus with an emphasis on User Experience and User Interface

Bachelor of Science
Clinical Laboratory Science
Winston-Salem State University, Winston-Salem, North Carolina 2009

Associate in Applied Science
Medical Laboratory Technology

Wake Technical Community College, Raleigh, North Carolina 1996

Professional Certifications

- Medical Laboratory Scientist (MLS)CM
    - Certified MLS through the American Society of Clinical Pathologists
- Blood Banking Technologist (BB)CM
    - Certified BB through the American Society of Clinical Pathologists
- VoiceThread Certified Trainer
- Google Certified Educator - Level 1
- Certified Leader in Educational Technology (CoSN)

Work Experience

Adjunct Faculty 2021-Present
Appalachian State University
Reich College of Education
Boone, NC
Online faculty instructing pre-service teachers on the digital integration of teaching and learning strategies within online and hybrid curriculum.

Program Director 2020- present
Fayetteville Technical Community College
Medical Laboratory Technology Program
Fayetteville, NC
Oversight and management of the Medical Laboratory Technology degree in Associate of Applied Science. Duties include curriculum development and management, program accreditation maintenance, instructional oversight, program fiscal management, student advising, faculty development, and instructional load.

Faculty Allied Health - Medical Laboratory Science 2016-Present
Winston Salem State University
Winston Salem, North Carolina
Design, development, and delivery of distance and eLearning courseware for Clinical Laboratory Science Distance Learning Program

Member of the course development team responsible for the transition of face-to-face course content to online courseware.

Administrative Laboratory Director 2019- 2020
McLeod Health
Dillon, SC

Complete oversight of Chemistry, Blood Bank, Hematology, Microbiology, and Specimen Collection departments, including capital and operational budgeting. This includes the onboarding, training and provision of continuing education credits for all employees. This role includes the design, development, and deployment of all training conducted within the department.

Leadership of a highly diverse employee population, providing customer service to patients in underserved and underrepresented populations.

Immucor, Inc. - Senior Instructional Designer 2018-2019
Atlanta, Georgia
Oversight of all Instructor-Led Training (ILT) and Web-based Training (WBT) design and development projects, including all customer training products as well as employee annual training. Project management and facilitation of needs assessment design, development and analysis for the goal of performance improvement in the Learning and Development department.

Associate Professor in Allied Health Sciences 2013-2017
Sandhills Community College
Pinehurst, North Carolina
Faculty member Medical Laboratory Scientist (MLS)CM

Laboratory Director/Hospital Administrator 2008-2013
Johnston Health
Clayton, North Carolina

Medical Technologist/Lead Medical Technologist 2001-2008
WakeMed Health and Hospitals
Raleigh, North Carolina

Medical Lab Technician/Team Leader 1997-2001
RexHealthcare
Raleigh, North Carolina

Division Administrative Responsibilities

Higher Education and Instructional Design

- Preparation for college and division accreditation by SACSCOC and NAACLS
- Inventory control and inventory budgeting

- Creation of online, e-Learning-based workforce development for staff and faculty
- Grant writing for workforce and vocational programs
- Member of Leadership Steering Committee - engaging in college and community initiatives for college advancement
- Review of program curricula, recommending change as needed based upon statistical analyses - data-driven determinations
- Serve as new faculty mentor to new and novice faculty
- Serve as faculty and student advisor
- Work with the division Dean on annual budget, division strategic plan, and evaluation.
- Participated in campus-wide student diversity programs, including LGBTQIA student club.
- Design and development of online, virtual clinical laboratory practicums
- Extensive experience with SME interviewing and trust building
- Qualitative and quantitative research projects with an emphasis on user experience and user interface design integration

Clinical Laboratory

- 25+ years of service in hospital clinical laboratories
- Preparation for Joint Commission, DNV, COLA, FDA, AABB, and College of American Pathologist on-site surveys for accreditation and re-accreditation
- Design, development, and administration of a full-service ancillary hospital laboratory, staffed 24/7
- Development of digital, online continuing education program for all clinical laboratory employees, including phlebotomists, MLT and MLS
- Design, administration, and maintenance of quality assurance program, including third party proficiency testing
- Management of multi-million dollar laboratory budget, including reporting of monthly EPP and RPP, annual budgeting, and employee FTE allocation
- Quarterly presentation to hospital Board of Directors and Administration

Courses / Workshops Developed and Delivered

- **College Courses Developed and Delivered**
  - MLT 110: Introduction to Medical Technology
  - MLT 111: Urinalysis and Body Fluid Analysis
  - MLT 120 Hematology and Hemostasis I
  - MLT 126: Immunology and Serology
  - MLT 127: Transfusion Medicine
  - MLT 130: Clinical Chemistry I
  - MLT 140: Introduction to Clinical Microbiology
  - MLT 217: Professional Issues in MLT
  - MLT 220: Advanced Hematology and Hemostasis
  - MLT 230: Advanced Clinical Chemistry
  - MLT 240: Special Clinical Microbiology
  - MLT 280: Special Practice Lab
  - CI2300 – Teaching and Learning in the Digital Age
  - CLS 3104 - Immunohematology

    - CLS 4101 - Workplace Education for CLS
    - CLS 4104 - Advanced Clinical Chemistry
    - CLS 4103 - Workplace Management for CLS
- **Workshops Developed and Taught**
    - Professional Development Workshops
        - Designed and delivered to college faculty in 1 to 2 hours sessions
            - Effective Use of Web 2.0 in the Classroom
            - Implementing PBL for Vocational Studies
            - Working in the Cloud - Using Google Drive
            - Writing Learning Goals and Learning Objectives
            - Developing Online Formative Assessment
            - Designing Instruction for the Workforce
            - Understanding the Adult Learner
            - Risk-based Thinking and Analysis in Healthcare
            - New Advisor Training
            - Foundations of Teaching for New Community College Faculty

Professional Development

MLS and BB(ASCP)

- Current faculty member in CLS program with the UNC system
- Completion of continuing education credits through online sources

Research

- Current studies in process:
    - Online Cognitive Apprenticeships: Using Social Media to Build Faculty Teaching Capacity and Collective Intelligence
    - User-centered Design Strategies for Workplace Job Aid Development

Publications

- "The Power of Open: Benefits, Barriers, and Strategies for Integration of Open Educational Resources," by Tian Luo, Kirsten Hostetler, Candice Freeman, and Jill E. Stefaniak | *Open Learning: The Journal of Open and Distance Learning* | 2019
- Like, Comment, and Share for Faculty Development: Accessible, Collaborative, and Sustainable Online Professional Learning Through Social Media - Literature review to be published in Education Technology Research and Development (ETR&D)
- LeaderLaunch - A Learning Initiative for Healthcare Systems: Needs Assessment and Intervention Planning for Effective Healthcare Leadership Development (Chapter submission)
- Performance Improvement in Healthcare: Integrating Gilbert's Behavior Engineering Model in a Just Culture (Chapter submission)

- In peer review::
    - Designing Training and Education for the Healthcare Workforce through the Patient Experience: A Systematic Literature Review

Conference Presentations

- NCSSAMT Annual Meeting 2021
- ASCLS Annual Meeting, 2021
- North Carolina Community College Performance Partnership, 2021
    - Instructional Design and Empathy: Creating Empathic Instruction to Promote Student Retention and Academic Success
- Canvas InstructureCon 2020
    - Presentation of design strategies for collaborative discussion forums in the Canvas learning management system
- AERA - 2020 Annual Meeting (Conference Canceled)
    - Paper Presentation: The Power of Open: Benefits, Barriers, and Strategies for Integration of Open Educational Resources
        - Hostetler, K., Freeman, C., Luo, T. & Stefaniak, J. (2020, Apr 17 - 21) The Power of Open: Benefits, Barriers, and Strategies for Integration of Open Educational Resources [Paper Session]. AERA Annual Meeting San Francisco, CA http://tinyurl.com/spfcec4 (Conference Canceled)
- ASCLS, Clinical Lab Educators Conference (CLEC) - 2018
    - Using Case-based Reasoning at an Instructional Strategy for Problem-based Learning Activities
- North Carolina Society for Clinical Laboratory Science - Carolinas Clinical Connection - 2018
    - The Current Landscape of Transfusion Medicine
- Free-Learning Conference at Appalachian State University - 2017
    - Using OER in Higher Education
- The Teaching Professor Education Technology Conference - 2016
    - E-poster presentation: Using the 4C/ID Model to Design Problem Based Instruction for Health Science Curriculum
- Fall Focus 2015 - North Carolina Society for Clinical Lab Science
    - Implementing CQI in the Hospital Blood Bank
- North Carolina Society for Clinical Laboratory Science, State Educator Meeting 2015
    - Designing Clinical Lab Instruction Through the Use of Web-Based Tools - Designing for Problem-Based Learning
- Fall Focus 2013 - North Carolina Society for Clinical Lab Science
    - Creation of Web-based CE in the Blood Bank

Awards and Honors

- WakeMed Circle of Quality Service Award
  Peer nominated award given to the top 1% of hospital employees who quality patient care, community service, and teamwork

Service Contributions

- Grant writing - voluntary assistance with grant writing in underserved and underrepresented communities
- Involved in faculty development and training through the Sandhills Community College Teaching and Learning Center and Winston Salem State University Department of Clinical Laboratory Science
- Conference Manager for TEDxSandhillsCommunityCollege - 2017
- North Carolina Society for Clinical Lab Science
    - Fall Focus Professional Development Conference 2016 Chairperson
    - 2016-2017 President
    - Fall Focus Professional Development Conference 2017 Chairperson
    - Carolinas Clinical Connection Conference 2016-2018 - design and development of multimedia promotional materials and conference website

Professional Memberships

- Association for Educational Communications and Technology (AECT)
- American Education Research Association (AERA)
- International Society for Performance Improvement (ISPI)
- American Society for Clinical Pathology (ASCP)
- American Society for Clinical Laboratory Science (ASCLS)
- North Carolina Society for Clinical Laboratory Science (NCSCLS)
- Quality Matters (QM)

Software Proficiency and Instructional Design/Human Performance Skill Sets

Statistical Packages

- IBM SPSS
- Microsoft Office Suite
- Google Suite

Instructional Design

- Adobe Captivate 9.0 - creation and production of interactive instruction
- Articulate Storyline 2 - creation and production of interactive instruction
- Articulate Rise
- Articulate 360
- Moodle and Blackboard LMS - course development and online delivery
- Canvas LMS - course development and online delivery
- Blackboard Coursesites - Open LMS
- Camtasia - creation and production of educational media
- Adobe Creative Cloud Suite of Applications: Ps, Pr, Ai, Id, etc.
- Adobe Dreamweaver web design - backend coding
- Google Apps for Education (Entire G+ Suite)
    - Google Certified Educator - Level 2
- Numerous Web 2.0 Presentation and Productivity Tools
    - VoiceThread Certified Trainer
- Advanced experience with assessment creation
- Conducts formal needs assessment and needs analysis for the determination of human performance interventions - industry and higher education
- Extensive knowledge and practice of Federal Section 508 standards

- Extensive knowledge and practice of Copyright and Fair Use
- Extensive knowledge of Creative Commons licensing and requirements
- Subject Matter Expert for faculty development and instruction of educational technologies/online tools used for instruction
- Experience and current practical application of course design, development, and delivery for face-to-face, hybrid, and online community college courses
- Extensive experience in developing workforce training and onboarding programs