ROLE OF ENGAGEMENT IN
ATHLETIC TRAINING CLINICAL EDUCATION:
A CASE STUDY

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The purpose of this study was to explore the role of engagement in clinical education at Kent State University (KSU). A qualitative case study was used to examine preceptors’ and students’ perspectives of clinical education experience to answer the following research questions: (1) To what extent are students engaged in their clinical experiences, and if engaged, how do they describe that engagement? and (2) What role(s) does engagement have in athletic training clinical education at KSU? This study used the Social Learning Theory (SLT) as the theoretical framework to understand engagement. Participants were seven preceptors and seven students in KSU’s athletic training program (ATP). Data were collected from two interviews and two observations through handwritten field notes and audio recordings of interviews during the Fall 2017 semester.

Findings revealed engagement in clinical education to be an active learning experience that requires application of knowledge (mental and physical), which occurred through observations, hands-on skills, discussion, and purposeful dialogue. In addition, learning experiences that incorporated complex cognitive processing were considered to have deeper engagement. The preceptor/student relationship was recognized as the factor that had the biggest influence in engagement in clinical education. Lastly, the role of engagement was identified as the application of knowledge to an authentic situation, which acknowledged a connection between didactic and clinical education.
The implications of this research highlight the need to develop stronger clinical education experiences, provide preceptor training on teaching, assessment, and evaluation of students, and examination of athletic training clinical education model.
DEDICATION

To myself . . . for every time you thought you could not do this you made a conscious decision to believe in yourself . . . you persevered . . . Congratulations Dr. Reed . . .

16 years of dreams is now a reality.
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I would not be here without the support of so many people. It’s hard to even begin to write this because there are so many individuals who played a role (no pun intended . . . hahaha) in my life which allowed me to achieve my dreams. But I have to start somewhere . . . so here goes . . .

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CHAPTER I
INTRODUCTION

In higher education, students prefer learning experiences that create an active learning environment (Struyven, Dochy, & Janssens, 2008; Struyven, Dochy, Janssens, & Gielen, 2008). Specifically, college students favor active learning experiences such as hands-on skill practice, application of knowledge, problem solving, and integration of multiple concepts (Aspland, 2009; Cronie & Coll, 2008; Struyven, Dochy, & Janssens, 2008; Struyven, Dochy, Janssens, & Gielen, 2008). When exploring the nature of active learning, it is clear that these experiences use engagement to facilitate learning. Active learning is characterized as doing something (physical movement) while learning (e.g., taping an ankle, drawing a picture, building a model; Chi, 2009). Therefore, active learning requires the student to have some form of engagement during the learning process. In addition, active learning experiences typically incorporate application of knowledge and decision-making, which are characteristics of critical thinking. Thus, active learning creates opportunities for engagement and critical thinking.

Similar findings regarding active learning and engagement have been witnessed in the athletic training education literature (e.g., Lafave, Katz, & Vaughn, 2013; Manspeaker, Van Lunen, Turocy, Pribesh, & Hankemeier, 2011a; Palmer, Edwards, & Racchini, 2014; Tamura, Stickley, & Labrash, 2014; Tivener & Gloe, 2015a; Tivener & Hetzler, 2015; Walker & Weidner, 2010). Athletic training students (ATS) prefer these types of learning experiences because they allow for real-life application; it challenges their critically thinking skills, and provides opportunities to apply their skills to authentic
situations (Palmer et al., 2014; Tamura et al., 2014; Tivener & Gloe, 2015a; Walker & Weidner, 2010). These learning experiences are formulated and facilitated by a wide-range of pedagogical approaches and instructional strategies within didactic and clinical education.

Didactic education encourages the use of peer assisted learning (PAL), case-based learning (CBL), self-directed learning (SDL), and mastery learning as pedagogical approaches that support active learning and engagement (e.g., D. C. Berry, 2013; Carr, Volberding, & Vardiman, 2011; Henning, Weidner, Snyder, & Dudley, 2012; Hughes & Berry, 2011; Schellhase, 2008; Speicher, Bell, Kehrhahn, & Douglas, 2012; Walker, Weidner, & Armstrong, 2015; Weidner & Popp, 2007). Didactic education reinforces this recommendation by providing additional literature on use of simulations, evidence-based teaching model (EBTM), multimedia technology, technical and tactical skills model, and plastinated anatomical specimens (PAS) as instructional strategies that promote learning through active learning and engagement (e.g., Armstrong & Jarriel, 2015; Manspeaker et al., 2011a; Manspeaker, Van Lunen, Turocy, Pribesh, & Hankemeier, 2011b; Tamura et al., 2014; Tivener & Gloe, 2015b; Walker & Weidner, 2010; Walker et al., 2015). Similarly, clinical education discusses the use of PAL, observational learning, self-discovery, critical thinking, modeling, and mentoring as pedagogical approaches and instructional strategies that use various methods of active learning and engagement to stimulate learning (Barnum et al., 2009; Hankemeier & Van Lunen, 2011; Henning, Weidner, & Jones, 2006; Henning, Weidner, & Marty, 2008; Henning et al., 2012; Mazerolle, Bowman, & Benes, 2015; Mazerolle, Eason,
Nottingham, & Barrett, 2016; Nottingham & Henning, 2014a). Furthermore, CBL, PAL, simulations, EBTM, technical and tactical skills model, and questioning and feedback have been shown to create learning experiences that develop students’ critical thinking, clinical reasoning, and decision-making skills (Armstrong & Jarriel, 2015; Barnum et al., 2009; D. C. Berry, 2013; Carr et al., 2011; Hankemeier & Van Lunen, 2011; Hawkins et al., 2015; Henning et al., 2006; Henning et al., 2008; Henning et al., 2012; Manspeaker et al., 2011a, 2011b; Speicher, Bell, Kehrhahn, & Douglas, 2012; Tivener & Gloe, 2015a; Walker & Weidner, 2010; Walker et al., 2015; Weidner & Popp, 2007).

Based on the current literature, it is evident that athletic training education advocates for the use of pedagogical approaches and instructional strategies that incorporate active learning, engagement, and critical thinking. However, the majority of evidence is found within didactic education, revealing a research gap in clinical education. In addition, most of the literature in clinical education lacks evidentiary support, indicating a paucity of original research. Thus, these findings emphasize the need to conduct empirical-based research in clinical education. Furthermore, original research in clinical education is also warranted to examine a current issue in athletic training education, which is athletic trainers’ (AT) inability to transition to clinical practice.

**Statement and Significance of the Problem**

“Transition to practice” refers to an individual’s ability to apply the knowledge and skills they learned in the didactic education to authentic situations in clinical practice. Currently, newly credentialed ATs are struggling to transition to practice (Carr &
Volberding, 2012; Massie, Strang, & Ward, 2009). Although new ATs have received national certification, they often lack the ability to function as autonomous practitioners. Some believe new ATs’ inability to transition to practice is a result of the standardized curriculum that has stemmed from athletic training accreditation.

After mandating accreditation in 2004, athletic training programs (ATP) altered their curriculum to meet accreditation standards by developing a highly structured curriculum that concentrated on didactic education. As a result, there was a large increase in Board of Certification (BOC) examination pass rates (BOC, 2002, 2004, 2005, 2012). Yet, issues with transitioning to practice persist, indicating a potential weakness in the athletic training clinical education model.

The deficiencies for integrating strong clinical education into the curriculum could be due to lack of research. Although the current literature on clinical education supports the use of pedagogical approaches and instructional strategies that employs active learning, engagement, and critical thinking, the amount of original research is extremely limited. In fact, the only original research on pedagogical approaches and instructional strategies in clinical education is on PAL, reflective observation, mentoring, and questioning and feedback (Henning et al., 2006; Henning et al., 2012; Mazerolle et al., 2015; Mazerolle et al., 2016; Nottingham & Henning, 2014a; Nottingham & Henning, 2014b), thus, emphasizing the need for more empirical research on pedagogical approaches and instructional strategies in clinical education. However, it is unique nature of the clinical education environment that makes this research challenging.
Rationale for Study

Although the current literature on clinical education supports the use of pedagogical approaches and instructional strategies that employs active learning, engagement, and critical thinking, the amount of original research is extremely limited. This could be due to the clinical education environment. Clinical education is defined as informal practical learning experiences where students apply classroom knowledge, skills, and professional behaviors at a clinical education site (e.g., college athletics, high schools, rehabilitation clinics, professional athletics, and physicians’ offices; Commission on Accreditation of Athletic Training Education [CAATE], 2015). During clinical education experiences students are assigned to a supervising AT, known as a preceptor, who mentors, supervises, and instructs students in the clinical environment. Thus, it is the informal environment of clinical education experiences that make it arduous to examine pedagogical approaches and instructional strategies since these methods are normally used in a traditional classroom setting. Another barrier to the clinical education environment is gaining access to health care facilities to conduct research due to the legal considerations associated with patient confidentiality. Furthermore, preceptors seldom have formal training in education, thus making them uninformed of effective teaching methods. Therefore, asking preceptors about the pedagogical approaches and instructional strategies could be ineffective.

To effectively examine pedagogical approaches and instructional strategies in clinical education, evaluation of the didactic education literature is necessary since the majority of evidence has been conducted in this area. Didactic education strongly
supports the use of pedagogical approaches and instructional strategies that use engagement to facilitate learning, thus engagement in clinical education must be studied. Examination of engagement in clinical education will reveal the pedagogical approaches and instructional strategies that naturally occur during learning experiences. Furthermore, it’s imperative that engagement is directly investigated because of the informal clinical education environment, limited access to health care facilities, and preceptors’ lack of educational training.

Finally, there is only one study that directly examines engagement in clinical education, which solely studied students’ perspectives (Benes, Mazerolle, & Bowman, 2014). Yet, based on the findings in didactic education, it is possible that pedagogical approaches and instructional strategies that use engagement could assist in creating improved clinical education experiences. Since these approaches and strategies have demonstrated success in the classroom, it is probable that they could be advantageous in clinical education. However, with limited evidence in clinical education this is only speculation. Thus, conducting empirically based research on engagement in clinical education from the preceptor and student perspective is needed in an attempt to inform athletic training education and assist in developing a stronger clinical education model.

**Purpose of the Study**

The purpose of the study was to explore the role of engagement in athletic training clinical education at Kent State University (KSU). Students’ and preceptors’ perspectives and how they make meaning of their lived experiences were used to examine engagement in clinical education. In addition, by exploring engagement in
clinical education, I was able to gather data that can inform athletic training education and assist in improving students’ clinical education experiences.

**Research Questions**

To achieve the purpose of the study, students’ and preceptors’ perspectives of clinical education experiences were used to answer the following research questions:

1. To what extent are students engaged in their clinical experiences, and if engaged, how do they describe that engagement?

2. What role(s) does engagement have in athletic training clinical education at KSU?

**Conclusion**

In the following sections of my dissertation, I provide a review of literature, theoretical framework, methodology, findings, discussion, and implications. The review of literature includes a synopsis of athletic training education reformation, summarization and synthesis of literature on pedagogical approaches and instructional strategies witnessed in didactic and clinical education and disclose the gaps within the athletic training education literature. I then explain the Social Learning Theory (SLT) theoretical framework from which this study was conducted. Next, I provide a detailed description of the qualitative methods that were used to collect and analyze the data for this case study. Following, I report findings of participants’ lived experiences of engagement in clinical education. Lastly, I conclude by discussing the findings of the current study and identifying implications it has on athletic training education.
**Definition of Terms**

*Active learning*: is characterized as doing something (often involving physical movement) while learning (Chi, 2009). Examples of active learning in athletic training would be: taping an ankle, performing ultrasound on a patient, or performing a diagnostic test on a patient.

*Board of certification examination*: is the national credentialing exam for athletic training. An individual must pass this examination to practice as an athletic trainer.

*Clinical education*: Comprises of formal and informal practical learning experiences where students can apply classroom knowledge, skills, and professional behaviors in the clinical environment (CAATE, 2016).

*Clinical education site*: A physical area where clinical education occurs. Examples of clinical sites would include: college athletics, high schools, rehabilitation clinics, professional athletics, and physicians’ offices (CAATE, 2016).

*Cognitive processing*: Mental thought process that encompasses critical thinking and application of knowledge (Bandura, 1977).

*Core faculty*: Administrative or teaching faculty devoted to the athletic training program and has full faculty status, rights, responsibilities, privileges, and full college voting rights as defined by the institution. This person is appointed to teach athletic training courses, engage in scholarship, advise, and mentor students in the athletic training program. Core full-time faculty report to and are evaluated and
assigned responsibilities exclusively by the administrator (chair, dean, or program
director) of the academic unit in which the program is housed (CAATE, 2018).

Critical thinking: A cognitive processing that requires comprehension, understanding,
application, analysis, synthesis, evaluation, and creation of knowledge. The
cognitive process also encompasses logical thinking, reasoning, and
decision-making skills (Anderson & Krathwohl, 2001).

Didactic education: Comprises of formal learning experiences provided to students in the
classroom and laboratory environment.

Engagement: Based on the main tenets of Social Learning Theory (SLT), it is defined as
a cognitive process that occurs in a social context comprised of personal,
behavior, and environmental factors. Engagement is characterized as experiences
that involve observational learning and mediational processes (Bandura, 1977).
In addition, engagement involves a series of events where the individual observes
and uses cognitive processing skills during the learning experience. An example
of engagement in athletic training education: conducting an evaluation on a
patient, diagnosing the patient based on the evaluation, developing patient goals
based on their diagnosis, creating a treatment plan by selecting modalities (e.g.,
ultrasound) and exercises (e.g., squats) to achieve the goals, and implements the
treatment plan by administering and supervising the treatment plan on the patient.

Instructional strategies: A specific method or application teachers use to deliver content
(e.g., simulations, eLearning, audience response systems, etc.).
**Mediational processes:** A cognitive process an individual goes through to determine if they should imitate the behavior witnessed during observational learning (Bandura, 1977).

**Observational learning:** Learning that occurs by observing the behaviors of others; also referred to as modeling (Bandura, 1977).

**Pedagogical approaches:** Learning approaches based on a theoretical framework (e.g., brain-based learning, case-based learning, peer-assisted learning).

**Preceptor:** A certified/licensed professional who supervises, teaches, and evaluates athletic training students in a clinical setting using an actual patient base (CAATE, 2016).

**Student-centered:** (used in conjunction with processing, learning, or teaching) describes a learning process where much of the power during the experience resides with students. In some cases, students and teachers are collaborators, sharing equal power during learning experiences (Estes, 2004).

**Transition to practice:** refers to an individual’s ability to apply the knowledge and skills they learned in the didactic setting to authentic situations in clinical practice.

**Abbreviations**

AMA: American Medical Association

ARS: Audience Response Systems

AT: Athletic Trainer

ATEJ: Athletic Training Education Journal

ATP: Athletic Training Program
ATS: Athletic Training Student
BOC: Board of Certification
CAATE: Commission on Accreditation of Athletic Training Education
CBL: Case-Based Learning
CORE: Clinical ORthopedic Exam
EBM: Evidence-Based Medicine
EBTM: Evidence-Based Teaching Model
IF-AT: Immediate Feedback Assessment Technique
JAT: Journal of Athletic Training
KSU: Kent State University
PAL: Peer-Assisted Learning
PAS: Plastinated Anatomical Specimens
PLAM: Predictive Learning Assessment Model
PM: Professional Masters’ Degree in Athletic Training
SDL: Self-Directed Learning
SLT: Social Learning Theory
SOAT: Standardized Orthopedic Assessment Tool
TMC: Traditional Multiple-Choice
CHAPTER II
REVIEW OF LITERATURE

In this review of literature, I provide a historical perspective of athletic training education curriculum and the evolution of athletic training education research. I then examine the current body of literature by discussing pedagogical approaches and instructional strategies, of which are separated into didactic and clinical education. I conclude the review by combining the literature in didactic and clinical education and providing a summary of the pedagogy approaches and instructional strategies witnessed in athletic training education. Finally, I end by discussing the theoretical framework I used to structure the current study.

Historical Perspective of Athletic Training Education

Athletic training education has dramatically evolved since the conception of the first curriculum model in 1959. Since 1959, athletic training has gone through three major educational reforms. The first occurred after mandating national certification in 1970 (Delforge & Behnke, 1999). After establishing the national certification exam, known as the Board of Certification (BOC), the original model was altered to create a curriculum that was focused, specialized, and exclusive to athletic training. In 1983, approximately 10 years after the first educational reformation, athletic training introduced the Guidelines for Development and Implementation of National Athletic Trainers’ Association Approved Undergraduate Athletic Training Education Programs (Guidelines) and the Competencies in Athletic Training (Competencies; Delforge & Behnke, 1999). The integration of these documents into the curriculum was to prepare
athletic training education for accreditation, which resulted in the second educational reformation.

In the early 1990s, the American Medical Association (AMA) recognized athletic training as an allied-health profession, which allowed athletic training programs (ATP) to receive accreditation. To comply with accreditation standards, athletic training changed the curriculum model to provide a standardized education that was closely tied to the Guidelines and Competencies (Delforge & Behnke, 1999). However, at that time, students did not have to graduate from an accredited ATP to sit for the BOC exam. Yet, this all changed in 2004 when athletic training adopted a policy stating the only route to national certification would be through completion of an accredited ATP (Craig, 2004). This policy triggered the third educational reformation in athletic training.

After mandating one route to certification, ATPs had to comply with accreditation standards. Thus, for the first time, all ATPs had to deliver the same type of standardized education. In addition, by this time, the standards had transformed since the adoption of accreditation in 1994. The number of accreditation standards had increased threefold and delineated a separation between didactic and clinical education. These additions to the standards placed a huge emphasis on didactic education. As a result, athletic training education produced a curriculum model that revolved around didactic education in order to meet new accreditation standards. Currently, this is the curriculum model athletic training follows today. However, in the near future, athletic training will be embarking on their fourth educational reformation.
In 2014, the Council for Higher Education Accreditation (CHEA) granted recognition to athletic training’s accreditation agency known as Commission on Accreditation of Athletic Training Education (CAATE). This recognition affirms athletic training’s commitment to upholding quality assurance standards in higher education and acted as a catalyst for curriculum reformation. In 2015, one year after receiving CHEA recognition, athletic training announced that an entry-level Bachelor’s degree would be removed as a route to certification. Instead, a Master’s in Athletic Training will be required to obtain entry into the field as of 2022.

A goal of the Professional Master’s Degree (PM) is to provide more advanced training and education to address athletic training’s transition to practice issues. Some athletic training associations, committees, and professionals have theorized that through graduate education, students will receive a specialized level of education that will better assist in their transition to practice. Therefore, it is crucial to examine and evaluate past and present athletic training education literature to provide future directions for the PM.

**Evolution of Athletic Training Education Research**

From 1959–1990, athletic training education focused on developing a curriculum model that identified and established athletic training as a health care profession (Delforge & Behnke, 1999). During the first three decades, athletic training was successful at producing a curriculum model that furthered the profession and prepared athletic trainers (AT) for clinical practice. However, since athletic training education was in its conception, there was no literature to support pedagogical approaches or instructional strategies in didactic and clinical education. Therefore, athletic training
relied on other health care disciplines to inform their teaching practices, such as: nursing, medicine, and physical therapy. It was not until after accreditation in 1991 that athletic training education literature became available.

Athletic training education literature first appeared in the *Journal of Athletic Training* (JAT) in 1992 (Foster & Leslie, 1992). The majority of literature in the 1990s was based on educational reformation (Mangus, 1998; Mathies, Denegar, & Arnhold, 1993; Miller, 1999; Starkey, 1997), clinical education (Andersen, Larson, & Luebe, 1997; Curtis, Helion, & Domsohn, 1998; Foster & Leslie, 1992; Mangus, 1998), and academic performance (Harrelson, Gallaspy, Knight, & Leaver-Dunn, 1997; Keskula, Sammarone, & Perrin, 1995; Starkey & Henderson, 1995). This was due in part to accreditation standards, the separation of didactic and clinical education, and the need for formal clinical instruction. In addition, there was a limited amount of literature on didactic education. The literature on didactic education was restricted to computer-based learning (Wiksten, Patterson, Antonio, La Cruz, & Buxton, 1998) and the assessment of student learning styles (Harrelson, Leaver-Dunn, & Wright, 1998). However, the literature that was available established a foundation for future athletic training education research.

From 1992–1999, the literature predominately gathered descriptive information on athletic training education. Descriptive information included: students’ learning styles (Harrelson et al., 1998), use of critical thinking skills (Fuller, 1997), identification of clinical teaching strategies (Foster & Leslie, 1992; Martin & Buxton, 1997), types of clinical education experiences (Andersen et al., 1997; Curtis et al., 1998), clinical
education supervision (Andersen et al., 1997), behaviors of preceptors (Curtis et al., 1998), student performance on the BOC exam (Harrelson et al., 1997; Starkey & Henderson, 1995) and overall academic performance (Keskula et al., 1995). At the time, collecting descriptive data made sense because athletic training education had to examine current practices prior to implementing strategies to improve educational outcomes.

Another theme witnessed in the 1990s literature was the comparison of curriculum and internship programs. A curriculum program was defined as an accredited ATP, while an internship program only required seven athletic training courses and completion of 1,500 clinical hours under the direct supervision of an AT (Dolan, 1996). The literature revealed curriculum programs to have significantly higher pass rates on the BOC exam than internship programs (Harrelson et al., 1997). However, when examining clinical education, there were no differences between curriculum and internship programs for student and program directors’ evaluation of preceptors. In addition, both types of programs were found to have preceptors that were helpful and nurturing, and provided strong mentorship (Curtis et al., 1998). These findings suggest that curriculum programs had stronger didactic education, yet they were not necessarily delivering better clinical education.

Overall, due to the limited amount of athletic training literature in the 1990s, no strong conclusion can be made on the effectiveness of didactic and clinical education strategies. However, minor conclusions can be drawn on the academic performance of programs. Research established curriculum programs to have more success on the BOC exam, yet delivered the same level of clinical education as internship programs (Curtis et
The difference between academic performance and program type was most likely a result of accreditation. Curriculum programs were required to meet accreditation standards that were closely tied to academic performance, resulting in strong didactic education, but mediocre clinical education. In addition, this was the first insight into accredited ATPs placing more emphasis on didactic education than clinical education. Interestingly, this insight grew as more athletic training education literature became available in the 2000s.

In 2004, athletic training mandated one route to national certification (Craig, 2004). This directive, along with having accredited ATPs for 10–15 years, inferred the research conducted during the early 2000s. From 2000–2006, there was a huge increase in literature on didactic and clinical education (Amato, Konin, & Brader, 2002; Carr & Drummond, 2002; Clark & Harrelson, 2002; Coker, 2000; Gould & Caswell, 2006; Peer & McClendon, 2002; Pitney & Ehlers, 2004; Schellhase, 2006; Stemmans & Gangstead, 2002; Stradley et al., 2002; Turocy, 2002; Weidner & Henning, 2002, 2004). In particular, for the first time, athletic training education literature involved pedagogical approaches and instructional strategies. For the purpose of this review, pedagogical approaches are defined as learning approaches based on a theoretical framework (e.g., brain-based learning, case-based learning, peer-assisted learning). Instructional strategies are defined as specific methods or applications used to deliver content (e.g., simulations, eLearning, audience response systems, etc.).

During the 2000s, didactic and clinical education continued to focus on similar concepts from the 1990s. The athletic training literature on didactic education largely
discussed the use of pedagogical approaches (Clark & Harrelson, 2002; Craig, 2003; Harrelson & Leaver-Dunn, 2002; Mensch & Ennis, 2002; Peer & McClendon, 2002; Schellhase, 2006; Turocy, 2002; Walker, 2003). Pedagogical approaches included: critical thinking (Amato et al., 2002; Harrelson & Leaver-Dunn, 2002; Walker, 2003), cognitive processing (Turocy, 2002; Weidner & Henning, 2002), problem-based learning (Heinrichs, 2002; Mensch & Ennis, 2002), active learning (Walker, 2003), brain-based learning (Craig, 2003), and sociocultural learning (Peer & McClendon, 2002). There was minimal literature on instructional strategies, which were limited to eLearning and use of multimedia technology in the classroom (Turocy, 2002; Wiksten, Spanjer, & Lamaster, 2002). Although more literature supported pedagogical approaches than instructional strategies in didactic education, both areas incorporated engagement into the learning experiences. In addition, didactic education began producing original research, which was most likely in response to ATPs receiving accreditation 10–15 years prior. These occurrences in the literature were due to the educational requirements and academic performance standards set by accreditation, which demanded the investigation of pedagogical approaches and instructional strategies in didactic education.

The literature on clinical education in the early 2000s provided more descriptive data on the types of clinical experiences and clinical supervision (Turocy, 2002; Turocy, Comfort, Perrin, & Gieck, 2000; Weidner & Henning, 2002; Weidner & Pipkin, 2002; Weidner, Noble, & Pipkin, 2006). In addition, peer assisted learning (PAL) was a pedagogical approach found to be naturally occurring in clinical education (Henning et al., 2006). Furthermore, students and preceptors found PAL to be beneficial because it
provided engaging learning experiences (Henning et al., 2006). Another aspect of clinical education research revolved around the behaviors, characteristics, training, and evaluation of preceptors (Weidner & Henning, 2004). These findings highlighted the impact student and supervising AT interactions had on learning. An emphasis on pedagogical approaches and the development of preceptors in the clinical education literature made sense because accreditation had formalized clinical education. Therefore, there was a need to study areas that influenced student learning in clinical education.

In review, the athletic training education literature from 2000–2006 revealed the use of more formal pedagogical approaches and instructional strategies in didactic and clinical education (Amato et al., 2002; Carr & Drummond, 2002; Clark & Harrelson, 2002; Coker, 2000; Gould & Caswell, 2006; Peer & McClendon, 2002; Pitney & Ehlers, 2004; Schellhase, 2006; Stemmans & Gangstead, 2002; Stradley et al., 2002; Turocy, 2002; Weidner & Henning, 2002, 2004). In addition, the types of pedagogical approaches and instructional strategies in both settings delivered experiences that facilitated learning through engagement. Furthermore, curriculum programs continued to have higher success rates on the BOC exam than internship programs (Turocy, 2002). These outcomes reinforced a finding that was initially determined in the 1990s literature, which was curriculum programs placing a larger emphasis on didactic education to meet accreditation standards. Thus, accreditation had resulted in a curriculum model that was extremely successful at preparing students for national certification. These findings continued to be supported as more literature became available in the years to come.
In 2006, there was a tremendous growth of athletic training education literature, mostly due to the publication of the first *Athletic Training Education Journal (ATEJ;* Ray, 2006). The purpose of the *ATEJ* was to provide a peer-reviewed journal that focused solely on athletic training education. Thus, the *ATEJ* published literature in both areas of education; however the primary focus of the journal was on didactic education. In response, the *JAT* began publishing more literature on clinical education. For over 10 years, athletic training has had two peer-reviewed journals producing educational literature. This resulted in a dramatic increase in athletic training didactic and clinical education research. Thus, for the purpose of this review, attention and focus are given to the literature witnessed over the past 12 years in athletic training education.

**Current Athletic Training Education Literature**

Examination of current athletic training education literature focuses on pedagogical approaches and instructional strategies. Specifically, I examine the nature of the pedagogical approaches and instructional strategies to reveal how athletic training facilitates learning in didactic and clinical education. In addition, my examination reveals gaps that are present in the body of literature.

For the purpose of the review on pedagogical approaches and instructional strategies, engagement is interpreted as interactions with others (i.e., peers, teachers, preceptors) or academic content. Interactions with others include any behavior or action where a person engages with another individual. Examples of this include: conversation with peers, classroom discussion, or completion of a task with others. Interactions with academic content are tasks and/or assignments that involve critical thinking. Critical
thinking is based on Bloom’s taxonomy, which requires application, analyzing, evaluation, and creation of knowledge during the learning experience (Anderson & Krathwohl, 2001). Examples of this would include: providing explanations for decision-making, developing treatment protocols for pathologies/conditions, and application of skills through scenarios and simulations.

In addition, it is possible that engagement can include both types of interactions. For example, students are given a list of questions they must answer based on content they had to read prior to coming to class. The students are placed into small groups to complete the task. When in the small groups, the students participate in discussions that require them to apply, analyze, evaluate, and create information, thus, offering an illustration on how engagement can include both types of interactions.

Lastly, for the review of literature active learning is interpreted as doing a physical movement while learning. Examples of active learning would include: constructing a model, taping an ankle, or performing an evaluation on a patient. Furthermore, it is feasible that engagement and active learning can both occur during the same learning experience. For example, three students are grouped together to complete an evaluation and diagnose a patient. One student is the clinician who is performing the evaluation. Another student acts as the patient, while the third student simply observes the evaluation. After the evaluation is completed, the group of students reflects on the learning experience by participating in discussion. During this example, students participate in both types of engagement by interacting with each other and interacting with content by using their critical thinking skills to determine a diagnosis, thus providing
a representation on how a learning experience can incorporate engagement and active learning.

**Athletic Training Education Pedagogy**

The athletic training education literature has discussed a wide variety of pedagogical approaches such as: Kolb’s experiential learning theory (Schellhase, 2006), PAL (Bates, 2014; Carr et al., 2011; Henning et al., 2006; Henning et al., 2008; Henning et al., 2012; Weidner & Popp, 2007), case-based learning (CBL; D. C. Berry, 2013; Speicher et al., 2012), mastery learning (Schellhase, 2008), and observational learning (Mazerolle et al., 2015). However, separation of didactic and clinical education reveals the majority of pedagogical approaches to be present in didactic education. Interestingly, although the emphasis of athletic training pedagogy is on didactic education, similar pedagogical approaches are witnessed in clinical education. This highlights the intimate relationship didactic and clinical education has by revealing how one area of education informs the other. Therefore, to provide a holistic examination of athletic training pedagogy, both areas of education are investigated.

**Didactic education.** Broad examination of athletic training literature in didactic education believes learning occurs through experiences. In particular, athletic training discusses Kolb’s experiential learning theory as a framework for developing learning experiences (Schellhase, 2006; Thon & Hansen, 2015). Kolb (1984) believed learning is a “process whereby knowledge is created through transformation of experience” (p. 38). Thus, to facilitate learning, students must be engaged in an experience that generates new knowledge. Schellhase (2006) applied Kolb’s experiential learning theory to athletic
training by creating learning experiences that revolve around engagement. This places the student at the center of the learning experience. In addition, Berry (2010) supports the importance of engagement during the learning process. Although D. Berry (2010) does not identify a specific pedagogical approach, she emphasized the need to structure learning experiences around engagement. Lastly, Peer (2015) echoed the use of engagement by asking teachers to participate in reflexivity. Peer (2015) stated, “Just because we teach does not mean that students learn” (p. 3). Thus, as teachers, we must reflect on past experiences to determine the effectiveness of our pedagogical approaches. In addition, reflexivity requires teachers to examine their pedagogy from the students’ perspectives, which structures the learning process around engagement of the student.

General analysis of didactic education literature demonstrates the need to structure learning around engagement. However, the literature is limited to best practice articles and fails to provide any evidentiary support. Thus, examination of specific pedagogical approaches in didactic education is warranted. Further investigation of the literature reveals two areas, student characteristics and the application of specific pedagogical approaches, that help inform didactic education pedagogy.

**Student characteristics.** Athletic training education has identified a variety of student characteristics that can be used to direct didactic education pedagogy. The first characteristic is student-learning styles. In particular, Mind Styles and Kolb’s model of learning styles are frameworks that have been used to classify students’ learning styles in didactic education (Gould & Caswell, 2006; Thon & Hansen, 2015). Investigation of undergraduate Mind Styles revealed the majority of students to be concrete sequential
learners (63%). Concrete sequential learners are methodical and prefer structured learning and “hands-on” experiences (Butler, 1987). In addition, there was no difference amongst the type of Mind Styles between lower and upper-division students (Gould & Caswell, 2006). These findings suggest that the use of physical activity and application of knowledge during learning experiences, thus supporting the use of pedagogical approaches that incorporate engagement, active learning, and critical thinking.

Similar results were witnessed when examining students’ learning styles with Kolb’s model. When asked to identify their preferred learning style, 75% of students classified themselves as a diverger learner (Thon & Hansen, 2015). Divergers prefer their learning environment to have concrete experiences and reflective observations. An example of reflective observation would be watching an individual perform a skill and then participating in a discussion where individuals reflect on what occurred during learning experiences. Diverger learners also enjoy looking at situations from different perspectives and engaging with other students in brainstorming sessions to generate multiple ideas. In addition, divergers are in touch with their feelings and extremely innovative (Thon & Hansen, 2015).

Full review of students’ learning styles recommends learning experiences that include physical tasks, opportunities for creation of knowledge, and interactions with others (Gould & Caswell, 2006; Thon & Hansen, 2015). In addition, characteristics of concrete sequential and diverger learners highlight the need for learning experiences to be structured around engagement and active learning. As a result, students’ learning styles provides evidence to support the use of pedagogical approaches that facilitate learning
through engagement, active learning, and critical thinking. However, goal orientation is another student characteristic that further advises didactic education pedagogy.

Goal orientation is “disposition toward developing or demonstrating ability in achievement situations” (VandeWalle, 1997). In other words, how a student responds and interacts throughout the learning experience is based on what they hope to accomplish during the lesson. In athletic training education, Peer (2007) discussed achievement goals as a framework to identify students’ goal orientation. Achievement goals are based on five orientations: performance, mastery, ego social, work avoidance, and socially directed (Peer, 2007). In addition, a student’s achievement goal orientation is often linked to their motivation. For example, mastery-oriented students seek accomplishment through challenges and have a genuine interest in the task at hand. Therefore, a mastery-oriented student’s motivation is based on personal intrinsic factors. In contrast, performance-oriented students feel accomplished when they please others, demonstrating a motivation that is guided by extrinsic factors (e.g., teachers, peers, etc.; Peer, 2007). As a result, a student’s achievement goal orientation guides their motivation, which impacts learning. Thus, goal orientation suggests the use of pedagogical approaches that incorporate engagement since the learning experience is based on students’ achievement goals.

The last student characteristic that informs didactic education pedagogy is students’ personal traits. Personal traits such as attitude, disposition, and desire can dramatically impact students’ behavior and interactions during learning experiences. Specifically, millennial students have a variety of personality traits that when properly
understood can enhance the learning process. Millennial students are described as: special, sheltered, team-oriented, confident, pressured, achieving, and conventional (Howe & Strauss, 2003). In particular, athletic training education discusses two traits of millennial students that influences didactic education pedagogy.

The first trait is being team-oriented. Millennial students prefer a team-oriented approach to learning because they struggle to find solutions on their own and are used to seeking assistance from others (Monaco & Martin, 2007). Thus, athletic training should conceptualize learning experiences that facilitate learning through engagement with peers. The second personality trait is a sense of pressure. Millennial students often feel pressured because of the high expectations set by their parents, peers, and society. To address this, teachers can design learning experiences that incorporate physical activity, real-life application, and offer continual feedback to decrease students’ stress levels and enhance learning (Monaco & Martin, 2007). Therefore, by discussing students’ personal traits as a way to conceptualize learning experiences, didactic education encourages the use of pedagogical approaches that incorporate engagement and active learning.

Complete examination of student characteristics in didactic education reveals the support of pedagogical approaches that structure learning experience around the student. Students’ learning styles informs athletic training to develop learning experiences based on the characteristics of concrete sequential and diverger learners (Gould & Caswell, 2006; Thon & Hansen, 2015). In addition, students’ goal orientation demonstrates the need to create learning experiences based on student achievement and motivation (Peer, 2007). Additionally, the personal traits of millennial students encourage the use of
interactions, real-life application, and feedback into learning experiences (Monaco & Martin, 2007). Although the literature on student characteristics does not identify a specific pedagogical approach, the literature still guides didactic education by providing information that advocates for pedagogical approaches that facilitate learning through engagement, active learning, and critical thinking.

Specific pedagogical approaches. Research on student characteristics supports the use of pedagogical approaches that incorporate active learning and engagement (Gould & Caswell, 2006; Thon & Hansen, 2015). However, the literature on student characteristics is limited because it merely suggests the use of these pedagogical approaches. Therefore, additional review of athletic training literature was necessary to identify specific pedagogical approaches, which revealed detailed frameworks for developing learning experiences. In particular, didactic pedagogical approaches included: CBL (D. C. Berry, 2013; Speicher et al., 2012), PAL (Carr et al., 2011; Henning et al., 2012; Weidner & Popp, 2007), self-directed learning (SDL; Hughes & Berry, 2011), and mastery learning (Schellhase, 2008).

CBL is a common pedagogical approach found in didactic education (D. C. Berry, 2013; Speicher et al., 2012). CBL uses detailed events and stories to describe a situation or a case. The purpose of a case is to initially present students with a decision, challenge, or problem. The student then works through the case to solve the issue (Hughes & Berry, 2011). In addition, CBL can be facilitated in a variety of ways such as: direct interaction with a patient, group activities with their peers, or solving the case by completing a written response about their decisions and actions.
Within athletic training literature, CBL has been presented as a pedagogical approach to develop students’ clinical reasoning skills (D. C. Berry, 2013; Speicher et al., 2012). D. C. Berry (2013) contended that CBL helps develop clinical reasoning by integrating a systematic approach in decision-making. Furthermore, CBL allows the student to play the role of an AT. Acting as an AT provides students with an opportunity to gather information and critically think about the situation to make a well-educated decision. To further enhance CBL, Speicher and colleagues (2012) discussed cues as a way to improve learning experiences. Cueing is when a teacher provides hints or clues to the students as they work on multiple cases at once. The purpose of cueing is to engage the student in clinical reasoning by requiring them to analyze similarities and differences between cases. This is different from standard CBL where the primary focus is on one case at a time. Therefore, CBL is a pedagogical approach that facilitates learning through engagement with others and content. In addition, CBL also fosters students’ critical thinking, clinical reasoning, and decision-making skills. However, D. C. Berry (2013) and Speicher and colleagues’ (2012) examples of CBL are not based on original research. Therefore, due to lack of evidentiary support, no conclusions can be made on the implementation of CBL in didactic education.

PAL is a pedagogical approach that encourages students to learn together through the support and guidance of their peers (Fuchs, Fuchs, & Burish, 2000). The purpose of PAL is to improve knowledge, skill, and acquisition through engagement with peers (Henning et al., 2006). Examples of PAL include: discussion and practicing of skills
with other students, solving a problem with assistance from peers, or having students
provide each other feedback when completing a task.

Within didactic education, PAL has been shown to increase students’ confidence
and decrease anxiety (Bates, 2014; Henning et al., 2006; Mensch & Ennis, 2002;
Weidner & Popp, 2007). In addition, formal PAL programs that had assigned peer-tutors
were found to improve students’ skill performance (Carr et al., 2011). Furthermore,
when graduated students were asked about their perceptions of PAL in their ATP, they
stated it improved communication, enhanced teaching skills, developed clinical reasoning
skills, and facilitated socialization (Bates, 2014). In addition, graduated students believed
PAL provided a deeper understanding of content, which led to their success on their BOC
exam (Bates, 2014). Yet, examination on the frequency of PAL in athletic training
education revealed the majority of PAL experiences to be unplanned or occurring in
clinical education, highlighting an overall lack of PAL in didactic education (Henning et
al., 2012).

Based on the characteristics, attributes, and evidence, it can be determined that
PAL is an effective pedagogical approach that promotes learning through engagement.
In addition, PAL promotes a deep understanding of content, which signifies application
of knowledge and critical thinking. However, PAL rarely occurs through didactic
education.

SDL is a process where the learner takes initiative in designing learning
experiences, defining objectives, finding resources, and evaluating their learning
(Knowles, 1975). In addition, many people believe SDL occurs in isolation, when in
reality, SDL often involves social interactions (Knowles, 1975). In particular, athletic training discusses the use of SDL as a pedagogical approach to facilitate learning through engagement (Hughes & Berry, 2011).

Hughes and Berry (2011) defined six principles for successful implementation of SDL: voluntary participation, mutual respect among participants, collaboration between members, a praxis of theory and practice, critical reflection of prior assumptions, and nourishment of self-directed empowerment. In particular, voluntary participation and collaboration between members demonstrates the use of engagement during learning experiences, which echoes similar characteristics of PAL. In addition, Hughes and Berry recommended the use of SDL when educating millennial students. Millennial students take pride in ownership of their work and enjoy applying their knowledge to real-life situations. SDL also addresses the needs of millennial students by constructing learning experiences that allows students to guide and control their learning. These attributes also suggest the use of engagement since the student directs the learning process. Therefore, SDL is a pedagogical approach that promotes learning through engagement and application of knowledge. However, Hughes and Berry’s application and integration of SDL into athletic training education is not based on original research. Thus, no conclusion can be made on the application of SDL in didactic education.

The last pedagogical approach witnessed in didactic education is mastery learning. Mastery learning is a pedagogical approach that guides the learning process by breaking down a subject area into smaller units with specific learning objectives. To progress from unit to unit, students must demonstrate competence in the current unit
before advancing to the next unit (Dunkle, 1984). In particular, Schellhase (2008) asserted the application of mastery learning when completing athletic training education requirements mandated by accreditation.

Currently, athletic training accreditation dictates the educational requirements students have to complete prior to graduation. Since educational requirements are already determined, mastery learning can be used to break down requirements into smaller units and create specific learning objectives for each unit (Schellhase, 2008). In addition, mastery learning facilitates learning by having students acquire knowledge in a progressive manner. This is achieved by requiring students to demonstrate a specific level of competence prior to advancing to the next unit (Schellhase, 2008). Gathering knowledge and skill in a sequential approach assures students understand and comprehend necessary content before learning advanced concepts. Thus, mastery learning is a pedagogical approach that promotes learning through demonstration of competence and proper organization of learning experiences (Schellhase, 2008). In addition, competence in athletic training is often achieved through physical demonstration of skills. Thus, mastery learning proposes the use of active learning as a way to facilitate learning. However, similar to other pedagogical approaches in didactic education, mastery learning does not have any evidentiary support. Thus, no conclusion can be made on the use of mastery learning in athletic training education.

Thorough review of specific pedagogical approaches in didactic education demonstrates the use of CBL, PAL, SDL, and mastery learning (D. C. Berry, 2013; Carr et al., 2011; Henning et al., 2012; Hughes & Berry, 2011; Mazerolle et al., 2015;
Speicher et al., 2012; Weidner & Popp, 2007). In addition, each specific pedagogical approach incorporates features that structure learning experiences around engagement. CBL, PAL, and SDL incorporate critical thinking, decision-making, and various forms of engagement when conceptualizing the learning experience, while PAL and mastery learning provide opportunities for active learning. When combined with the literature on student characteristics, it is clear that didactic education advocates for pedagogical approaches that facilitate learning through engagement, active learning, and critical thinking. However, PAL and student learning styles are the only areas of pedagogy based on original research (Bates, 2014; Gould & Caswell, 2006; Henning et al., 2006; Thon & Hansen, 2015; Weidner & Popp, 2007). Thus, athletic training didactic education encourages the use of these pedagogical approaches with minimal evidentiary support, which emphasizes the need for more original research on pedagogical approaches in didactic education.

**Clinical education.** The literature on clinical education pedagogy is extremely limited compared to didactic education. This is most likely due to clinical education occurring in informal settings, thus, the use of traditional teaching methods is less common. Although limited, clinical education uses similar pedagogical approaches witnessed in didactic education. In particular, clinical education discusses the use of PAL (Henning et al., 2006; Henning et al., 2008; Henning et al., 2012), observational learning (Mazerolle et al., 2015), and mentoring (Mazerolle et al., 2016) as specific pedagogical approaches.
As previously discussed, PAL is a pedagogical approach that facilitates learning through encouragement, support, and guidance of peers (Fuchs et al., 2000). In athletic training, Henning and colleagues (2008) provided a review of literature on the application of PAL within clinical education. They specifically discussed four types of PAL: peer teaching and learning, peer assessment and feedback, peer mentoring, and peer leadership. In addition, for each type of PAL students are given a role that requires them to engage with their peers during clinical experiences. Furthermore, Henning and colleagues (2008) prefaced that PAL should not replace the roles of preceptors; instead PAL should be used to enhance and strengthen clinical education experiences through peer instruction, assessment, and feedback. However, the review of literature is based on the integration of PAL in other disciplines (Henning et al., 2008). Thus, examination of original research in athletic training is needed to support the application of PAL in clinical education.

Within athletic training clinical education, PAL has been shown to increase students’ confidence because students feel less anxious performing skills on patients in front of their peers than in front of their supervising AT (Henning et al., 2006). Additional research on PAL revealed that 66% of students stated they practiced a moderate to large amount of their clinical skills with another student (Henning et al., 2006). PAL was also perceived to be beneficial because students enjoyed competitive and collaborative experiences and felt more comfortable asking their peers questions than preceptors (Henning et al., 2006). In addition, students reported participating in peer modeling more frequently than peer mentoring, assessment, and feedback (Henning et al.,
Based on the evidence and characteristics of PAL, it can be concluded that engagement, active learning, and critical thinking are used to facilitate learning in clinical education. In addition, PAL is a pedagogical approach that provides opportunities for informal learning experiences that increase student confidence and decrease anxiety. Still, the original research on PAL in clinical education is limited, thus more research is needed to determine its use in athletic training. However, observational learning and mentoring are pedagogical approaches that have evidence to support their use in clinical education.

Observational learning is when the learner gains understanding by watching the actions and responses of others (Fryling, Johnston, & Hayes, 2011). Observational learning often occurs through modeling or mentoring, which is when a more experienced person demonstrates appropriate behaviors (Bandura, 1977). In addition, reflection is commonly incorporated after the observational learning experience to facilitate learning. This is referred to as reflective observation. In athletic training, students found reflective observation to be beneficial during early academic years, when the right clinical opportunity presented itself, and when the observation included mentoring and discussion with their supervising AT (Mazerolle et al., 2015). In addition, students stated they valued opportunities that allowed them to observe an AT modeling skills and behaviors before performing the task themselves (Mazerolle et al., 2015). These findings on reflective observation help reinforce the use of engagement in clinical education.

As previously mentioned, mentoring is a desired component of reflective observation. Mentoring is a process where two people develop a purposeful relationship
that fosters personal and professional growth (Pitney & Ehlers, 2004). Due to the unique relationship and its connection to professional development; mentoring can be viewed as a pedagogical approach that uses engagement to facilitate learning. Further examination of mentoring in clinical education revealed students perceived mentoring to provide support and understanding, advance their clinical practice, and help develop career goals (Mazerolle et al., 2016). In particular, due to improvement in students’ clinical practice; mentoring can also be viewed as a pedagogical approach that enhances learning experiences.

The research in clinical education demonstrates PAL, reflective observation, and mentoring as pedagogical approaches that promote learning through engagement (Henning et al., 2006; Henning et al., 2012; Mazerolle et al., 2015; Mazerolle et al., 2016). In addition, PAL integrates active learning and critical thinking into learning experiences through skill practice with peers and modeling (Henning et al., 2006; Henning et al., 2012). Thus, it can be determined that clinical education supports the use of pedagogical approaches that facilitate learning through engagement, active learning, and critical thinking. However, similar to other areas of clinical education, the original research on reflective observation and mentoring is limited, thus more research is needed to establish its use in athletic training.

**Didactic and clinical education pedagogy.** Comprehensive examination of athletic training literature demonstrates a variety of pedagogical approaches in didactic and clinical education (Bates, 2014; D. C. Berry, 2013; Carr et al., 2011; Gould & Caswell, 2006; Henning et al., 2006; Henning et al., 2008; Henning et al., 2012; Hughes
& Berry, 2011; Mazerolle et al., 2015; Mazerolle et al., 2016, Schellhase, 2006, 2008, Speicher et al., 2012; Thon & Hansen, 2015; Weidner & Popp, 2007). Within didactic education, the literature on student learning styles, goal orientation, and characteristics provide information that encourages the use of pedagogical approaches that support student-centered education (Gould & Caswell, 2006; Peer, 2007; Monaco & Martin, 2007; Thon & Hansen, 2015). In addition, didactic education identifies CBL, PAL, SDL, and mastery learning as pedagogical approaches that facilitate learning through engagement, active learning, and critical thinking (D. C. Berry, 2013; Carr et al., 2011; Henning et al., 2012; Hughes & Berry, 2011; Mazerolle et al., 2015; Speicher et al., 2012; Weidner & Popp, 2007). Similar pedagogical approaches are witnessed in clinical education. PAL, observational learning, and mentoring all provide learning experiences that allow students to have an active role in their learning process (Henning et al., 2006; Henning et al., 2008; Henning et al., 2012; Mazerolle et al., 2015; Mazerolle et al., 2016). In addition, these pedagogical approaches incorporate engagement, active learning, and critical thinking into learning experiences.

In conclusion, the literature on athletic training pedagogy clearly advocates for the use of engagement, active learning, and critical thinking as a way to facilitate learning. However, the majority of evidence on pedagogical approaches focuses more on engagement than active learning and critical thinking. Furthermore, there is an overall lack of evidentiary support for pedagogical approaches in didactic and clinical education. PAL, observational learning, and mentoring are the only pedagogical approaches that provide evidence to support their use in athletic training education (Bates, 2014; Carr et
al., 2011; Henning et al., 2006; Henning et al., 2012; Mazerolle et al., 2015; Mazerolle et al., 2016; Weidner & Popp, 2007). This finding establishes an overall need for more original research on athletic training pedagogy. Although research is lacking in athletic training pedagogy, there is sufficient evidence to support the use of instructional strategies in athletic training education.

**Athletic Training Instructional Strategies**

The athletic training education literature discusses numerous instructional strategies such as: simulations (Armstrong & Jarriel, 2015; Tivener & Gloe, 2015a; Walker & Weidner, 2010; Walker et al., 2015), evidence-based medicine (EBM; Hankemeier & Van Lunen, 2011; Manspeaker et al., 2011a), audience response systems (ARS; Tivener & Hetzler, 2015), questioning and feedback (Barnum et al., 2009; Bowman & Laurent, 2011; Nottingham & Henning, 2014a), and multimedia technology (Carpenter, Lengel, Weaver, & Wagner, 2011; Hamson-Utley & Stiller-Ostrowski, 2013; Payne & Berry, 2011; Wagner, 2011). In addition, comparison of didactic and clinical education reveals the majority of instructional strategies to be in didactic education, a theme also witnessed in pedagogical approaches. Although the majority of instructional strategies are occurring in didactic education, there are similar methods being applied to clinical education.

**Didactic education.** The available evidence on instructional strategies is far more extensive than the literature on pedagogical approaches in didactic education. In particular, didactic education discusses the use of simulations (Armstrong & Jarriel, 2015; Tivener & Gloe, 2015a; Walker & Weidner, 2010; Walker et al., 2015),
multimedia technology (Carpenter et al., 2011; Hamson-Utley & Stiller-Ostrowski, 2013; Payne & Berry, 2011; Tivener & Hetzler, 2015; Wagner, 2011), and various instructional models (Bowman & Laurent, 2011; Hawkins, Sharp, & Williams, 2015; Lafave et al., 2013; Manspeaker et al., 2011a; Tamura et al., 2014). Interestingly, examination of the instructional strategies in didactic education reveals themes that are also present in athletic training pedagogy.

**Simulations.** Simulations are instructional strategies commonly used in athletic training education. Currently, there are two types of simulations used in didactic education. The first type is a standardized patient simulation (Armstrong & Jarriel, 2015; Tivener & Gloe, 2015a; Walker & Weidner, 2010; Walker et al., 2015). Standardized patient simulations use a trained professional to act as a patient with a specific condition or pathology. During the simulation, the student engages in a scenario where they evaluate and treat the patient’s condition. Following the scenario, the student receives feedback from the patient and the teacher who is supervising the learning experience. The second type of simulation is high-fidelity (Palmer et al., 2014; Tivener & Gloe, 2015b). High-fidelity simulations use a computer-based mannequin as the patient. By using a mannequin, high-fidelity simulations allow students to provide more treatment than a standardized patient simulation because the student’s actions cannot harm the patient.

In didactic education, simulations have been shown to increase students’ knowledge (Tivener & Gloe, 2015b) and confidence (Armstrong & Jarriel, 2015; Tivener & Gloe, 2015b; Walker & Weidner, 2010; Walker et al., 2015). In addition, students
reported simulations to be an overall positive learning experience because it provides opportunities to practice skills and apply knowledge to real-life scenarios (Palmer et al., 2014; Tivener & Gloe, 2015a; Walker & Weidner, 2010). Students also prefer simulations because they promote PAL (Palmer et al., 2014; Tivener & Gloe, 2015a; Walker et al., 2015). In particular, students expressed how simulations emphasize the importance of communication and teamwork amongst their peers, which allowed them to learn from each other (Armstrong & Jarriel, 2015; Palmer et al., 2014; Tivener & Gloe, 2015a).

Overall, the research demonstrates similar benefits for both types of simulations. However, there was a difference between types of simulations when students were asked to reflect on their actions. Students exposed to high-fidelity simulations reported reflecting on their immediate actions by considering what they could have improved on in that exact moment of the simulation (Tivener & Gloe, 2015a). Similarly, students exposed to standardized patient simulations reflected on their immediate actions, but also used their reflections to make better health care decisions for the future (Walker et al., 2015). Therefore, standardized patient simulations can be seen as an instructional strategy that allows students to consider future implications of their decision-making.

In conclusion, simulations were found to be an instructional strategy students preferred, because it improved their confidence (Armstrong & Jarriel, 2015; Tivener & Gloe, 2015b; Walker & Weidner, 2010; Walker et al., 2015), allowed for real-life application (Armstrong & Jarriel, 2015; Palmer et al., 2014; Tivener & Gloe, 2015a, 2015b; Walker & Weidner, 2010; Walker et al., 2015), and encouraged PAL (Palmer et
al., 2014; Tivener & Gloe, 2015a; Walker et al., 2015). In addition, high-fidelity simulations were found to increase student knowledge (Tivener & Gloe, 2015b). Furthermore, simulations provide opportunities for hands-on skills practice, peer interactions, application of knowledge, and decision-making. Thus, it can be determined that simulations can be used as an instructional strategy that facilitates learning through engagement, active learning, and critical thinking in didactic education.

**Evidence-based medicine.** Another instructional strategy witnessed in didactic education is the Evidence-Based Teaching Model (EBTM). The EBTM introduced students to EBM concepts using a five-step process: (a) defining a clinical question, (b) searching for evidence, (c) critical appraisal of the evidence, (d) use of clinical expertise, and (e) determining appropriate treatment (Straus, Glasziou, & Haynes, 2005). Within athletic training, the EBTM was implemented into therapeutic modality and rehabilitation courses over a three-day period. During this timeframe, the EBTM exposed students to a variety of activities such as: reading articles, PowerPoint lectures, class discussions, case scenarios, and critical thinking assignments (Manspeaker et al., 2011a, 2011b). Examination of the EBTM revealed a significant increase in students’ knowledge, assurance in knowledge, familiarity, and confidence in EBM skills. However, students’ interest and understanding of the importance of EMB remained the same (Manspeaker et al., 2011a). In addition, teachers felt the EBTM was successful because it fostered an inquisitive learning environment, critical thinking, and communication amongst peers and the teacher (Manspeaker et al., 2011b). Furthermore, the majority of teachers stated
they planned to use the EBTM in the future because they believed exposing students to EBM properly prepares them for clinical practice.

In brief, the EBTM was found to be an instructional strategy that improved students’ knowledge and understanding of EBM (Manspeaker et al., 2011a). In addition, the EBTM provided learning experiences that required students to critically think and apply their knowledge and skills (Manspeaker et al., 2011b). Thus, the EBTM can be used as an instructional strategy to enhance students’ learning experiences with EBP concepts. Furthermore, EBTM presented opportunities for interactions with peers and content, thus supporting the use of engagement during learning experiences. However, these findings are based on a single implementation of the EBTM, thus further study of the EBTM is needed to support its practice in didactic education.

**Multimedia technology.** Multimedia technology is an instructional strategy that uses various forms of technology to facilitate learning in didactic education (Carpenter et al., 2011; Hamson-Utley & Stiller-Ostrowski, 2013; Payne & Berry, 2011; Tivener & Hetzler, 2015; Wagner, 2011). Types of multimedia technology seen in athletic training include: ARS (Tivener & Hetzler, 2015), social media interfaces (Payne & Berry, 2011; Wagner, 2011), and interactive applications (Carpenter et al., 2011; Hamson-Utley & Stiller-Ostrowski, 2013). In addition, the purpose of multimedia technology instructional strategies is to facilitate learning through engagement and active learning.

ARS are widely used in higher education (Abrahamson, 2006; Cain & Robinson, 2008; Patterson, Kilpatrick, & Woebkenberg, 2010). ARS have been shown to increase student knowledge, enhance engagement, and improve student satisfaction in other health
care professions (J. Berry, 2009; Cain & Robinson, 2008; Patterson et al., 2010). Similar results have been witnessed in athletic training didactic education. Tivener and Hetzler (2015) found ARS to improve students’ knowledge and increased students’ individual interactivity. This finding agrees with evidence from nursing and medicine, by supporting the use of ARS as an instructional strategy that increases student knowledge through engagement. However, the original research on ARS in athletic training education is limited to a single study, thus a definite conclusion on the use of ARS cannot be determined.

Another type of multimedia technology observed in didactic education is the application of social media (Payne & Berry, 2011; Wagner, 2011). Social media interfaces such as texting, Twitter®, and Facebook® have been described to facilitate learning through engagement and active learning (Payne & Berry, 2011; Wagner, 2011). In particular, Payne and Berry (2011) explained the use of texting, Twitter®, and Facebook® as ways to communicate and interact with students. Payne and Berry (2011) also provided examples on how to ask questions, briefly summarize concepts, and send reminders about class events through social media. Wagner (2011) contributed to Payne and Berry’s (2011) integration of social media by outlining a basic tutorial on social media applications. Wagner (2011) provided a step-by-step process to assist with creating accounts, managing settings, and syncing accounts to multiple devices. In addition, Wagner (2011) offered specific illustrations on how to incorporate social media into learning experiences. However, the literature that encourages the use of social media
as instructional strategies is based purely on anecdotal evidence. Thus, no conclusion can be made on the implementation of social medial in athletic training education.

The last type of multimedia technology witnessed in didactic education is interactive applications. In particular, the literature discusses eLearning tools (Carpenter et al., 2011) and iPad applications (Hamson-Utley & Stiller-Ostrowski, 2013) as interactive applications that stimulate engagement. In particular, Carpenter and colleagues (2011) discussed a variety of eLearning tools can assist with creating interactive presentations that require student participation. In addition, Hamson-Utley and Stiller-Ostrowski (2013) recommended the use of iPad applications as a way to promote engagement. In particular, Hamson-Utley and Stiller-Ostrowski (2013) endorsed the use of the Clinical ORthopedic Exam (C.O.R.E.) application during physical assessment courses. The C.O.R.E. application is a vast database of special tests that uses visual and audio interactions to explain and describe physical assessment techniques. The C.O.R.E. application allows students to interact with the application while participating in classroom activities and discussions. Therefore, the use of interactive applications is seen as an instructional strategy that facilitates learning through engagement and active learning. However, the literature on interactive applications, like many others in athletic training education, is practitioner-based. Therefore, no resolution on the use of interactive applications in didactic education can be established.

In conclusion, the literature on multimedia technology discusses the use of ARSs, social media, and interactive applications as instructional strategies that facilitate learning through engagement and active learning (Carpenter et al., 2011; Hamson-Utley &
However, ARS is the only instructional strategy that has been shown to increase students’ knowledge and engagement in didactic education (Tivener & Hetzler, 2015). The literature on social media and interactive applications is anecdotal, thus failing to provide any evidence to support its use. Therefore, additional examination on types of multimedia technology is necessary to support its use in didactic education.

*Predictive Learning Assessment Model.* The Predictive Learning Assessment Model (PLAM) is another instructional strategy witnessed in didactic education (Lafave et al., 2013). PLAM uses Earl’s learning model as a framework (Lafave et al., 2013). Earl’s learning model is based on the premise of “assessment for learning” and “assessment as learning” (Earl, 2003). To properly assess learning, students’ knowledge is measured during and after learning experiences to evaluate their understanding of content. The teacher then examines the gaps in students’ understanding to create personalized learning experiences (Earl, 2003).

In athletic training education, Lafave and colleagues (2013) developed an instructional strategy, known as PLAM, that integrates Earl’s learning model to assess students’ understanding and develop personalized learning experiences. Application of PLAM used the Standardized Orthopedic Assessment Tool (SOAT) as an assessment tool to collect information on students’ knowledge of orthopedic evaluations.

The SOAT analysis was used to evaluate students’ understanding of content and determine their level of competence. If competence was not achieved, the teacher re-conceptualized learning experiences to revisit the content students needed to attain
competence. The SOAT was continually used to evaluate students’ understanding until competence was achieved. Lafave and colleagues (2013) found that students who were exposed to PLAM and SOAT in an orthopedic assessment course had a significantly higher competence than students who were not exposed to SOAT (Lafave et al., 2013). Therefore, PLAM can be used as an instructional strategy that improves learning in athletic training orthopedic courses (Lafave et al., 2013). In addition, PLAM alludes to the use of engagement since learning experiences are conceptualized based on student needs. However, the evidence on PLAM is limited to this one study, thus further examination of PLAM is needed to determine its effectiveness in didactic education.

**Immediate Feedback Assessment Technique.** The Immediate Feedback Assessment Technique (IF-AT) is an instructional strategy that facilitates learning by having students answer multiple-choice questions until they distinguish the correct answer. In addition, the IF-AT has been shown to improve students’ retention rates of information in general education courses (Epstein, Lazarus, & Calvano, 2002). However, similar results were not witnessed in athletic training education.

In didactic education, Bowman and Laurent (2011) compared the IF-AT to traditional multiple-choice (TMC) exams in upper-level athletic training education courses. Results revealed no difference between the IF-AT and TMC on students’ retention rates of information (Bowman & Laurent, 2011). However, students did express high satisfaction with the IF-AT because students were able to calculate their score and it provided them with the correct answer for every question. In addition, students preferred the IF-AT because they enjoyed knowing they got the correct answer.
(Bowman & Laurent, 2011). Thus, it can be determined that although the IF-AT did not improve students’ retention of information in athletic training, students did enjoy learning experiences that incorporated the IF-AT (Bowman & Laurent, 2011). Furthermore, the characteristics of IF-AT insinuate the use of engagement since the learning experience is guided by students’ interaction with the content. However, just like many other instructional strategies in athletic training education, this recommendation is based on a single study, thus further examination of the IF-AT is necessary to determine its use.

**Technical and tactical skills model.** The technical and tactical skills model is an instructional strategy that facilitates learning through modeling, practice, feedback, and application. The first part of the instructional strategy teaches technical skills using a four-step method: (a) introduction of the concept by the teacher, (b) demonstration and explanation of the concept by the teacher, (c) practice of concept by the student, and (d) correction of errors provided from the teacher to the student (Metzler, 2005). The technical aspect promotes learning by having students observe modeling of the skill, providing opportunities for students to practice the skill, and giving students feedback on their skills performance. The second part of the instructional strategy teaches tactical components using a five-step process: (a) identification of a decision, (b) determining the knowledge to make a good decision, (c) recognition of signs that should or should not be attended to, (d) selection of appropriate tactical options, and (e) creating an opportunity for students to interpret a situation and select appropriate tactics. The tactical skill facilitates learning by having students apply their knowledge to a new situation. In
addition, the tactical skills develop critical thinking by requiring students to gather, assess, and evaluate information to make a well-educated decision (Martens, 2012).

Within athletic training, didactic education discusses the application of the technical and tactical skills model as an instructional strategy that facilitates learning through proper organization of learning experiences, engagement, active learning, and critical thinking. In particular, Hawkins and colleagues (2015) highlights the importance of teaching technical skills before tactical skills. Teaching technical skills such as taping, wrapping, and assessment establishes the knowledge students need prior to application. Thus, when performing tactical skills such as treatment and rehabilitation, students have the foundational knowledge to apply their skills to situations. In addition, Hawkins and colleagues (2015) stated how the technical and tactical skills model helps develop students’ clinical reasoning skills, which is essential to clinical practice. Furthermore, both aspects of the instructional strategy incorporate various forms of engagement and active learning into the learning process. However, the literature on the technical and tactical skills model is practitioner-based and fails to have any evidentiary support in athletic training education. Thus, no conclusions can be made to support its use as instructional strategy.

**Content specific.** The last instructional strategy observed in didactic education is content specific. For this review of literature, a content specific instructional strategy will be defined as a tool or method that is used to teach a specific content area. One content specific instructional strategy is the use of plastinated anatomical specimens (PAS). PAS are commonly used to teach anatomy because of their accurate and
authentic representation of authentic human anatomy (Bickeley, Walker, Jackson, & Donner, 1987; Dawson, James, & Wilson, 1990; Latorre, Garcia-Sanz, & Moreno 2007).

In athletic training, PAS was incorporated into a physical assessment course to depict common sports injuries seen in an active population. The PAS allowed students to interact with the specimen to better understand injury mechanisms, patients’ symptoms, and perform evaluation techniques. Overall, students found the use and application of PAS to be extremely beneficial. More than 95% of students stated PAS was useful for learning anatomy, developing palpation skills, and improving injury assessment techniques (Tamura et al., 2014). Students also expressed a preference for PAS over traditional anatomical models because they provided a “real” depiction of anatomical structures (Tamura et al., 2014). In addition, PAS provides opportunities for hands-on application, which allows the student to physically interact and engage with the content. Therefore, PAS can be used as an instructional strategy to enhance students’ learning experiences on injury evaluation and diagnosis through engagement and active learning.

In summary, there currently are a wide variety of instructional strategies in the athletic training education literature. Simulations, EBTM, ARS, PLAM, IF-AT, and application of PAS are instructional strategies found to improve student learning (Armstrong & Jarriel, 2015; Bowman & Laurent, 2011; Lafave et al., 2013; Manspeaker et al., 2011a, 2011b; Tamura et al., 2014; Tivener & Gloe, 2015b; Walker & Weidner, 2010; Walker et al., 2015). In particular, high-fidelity simulations (Tivener & Gloe, 2015b), EBTM (Manspeaker et al., 2011a, 2011b), PLAM (Lafave et al., 2013), and use of PAS (Tamura et al., 2014) were found to improve students’ knowledge. In addition,
students’ confidence increased with simulations (Armstrong & Jarriel, 2015; Tivener & Gloe, 2015b; Walker & Weidner, 2010; Walker et al., 2015) and EBTM (Manspeaker et al., 2011a). Therefore, it can be determined that simulations, EBTM, ARS, PLAM, IF-AT, and application of PAS can be used as instructional strategies in didactic education.

Furthermore, general review of the didactic education literature demonstrates these instructional strategies use engagement, active learning, and critical thinking. Specifically, simulations, EBTM, multimedia technology, PLAM, IF-AT, and technical and tactical skills incorporate engagement by requiring students to interact with their peers or content (Armstrong & Jarriel, 2015; Bowman & Laurent, 2011; Lafave et al., 2013; Manspeaker et al., 2011a, 2011b; Tivener & Gloe, 2015b; Walker & Weidner, 2010; Walker et al., 2015). While simulations, multimedia technology, technical and tactical skills, and PAS use skill practice and hands-on application to create an active learning environment (Armstrong & Jarriel, 2015; Tamura et al., 2014; Tivener & Gloe, 2015b; Walker & Weidner, 2010; Walker et al., 2015). In addition, simulations, EMTB, and technical and tactical skills were found to create learning experiences that stimulate critical thinking, clinical reasoning, and decision-making skills. Thus, it can be determined that athletic training strongly encourages the use of instructional strategies that facilitate learning through engagement, active learning, and critical thinking.

However, the original research on instructional strategies is limited to simulations, EBTM, ARS, PLAM, IF-AT, and PAS (Armstrong & Jarriel, 2015; Bowman & Laurent, 2011; Lafave et al., 2013; Manspeaker et al., 2011a, 2011b; Tamura et al., 2014; Tivener
& Gloe, 2015b; Walker & Weidner, 2010; Walker et al., 2015). In addition, a majority of evidence on instructional strategies is supported by a single study. Furthermore, athletic training’s recommendation of social media, interactive applications, and technical and tactical skills model are not based on original research (Carpenter et al., 2011; Hamson-Utley & Stiller-Ostrowski, 2013; Payne & Berry, 2011; Wagner, 2011), thus, failing to provide evidence to support its use in didactic education. Although there is evidence to support the use of some instructional strategies, more original research in didactic education is warranted.

Clinical education. This literature on instructional strategies in clinical education is extremely limited. In fact, there currently is no evidence to support any instructional strategy in clinical education. However, there is some literature that helps inform instructional strategies in clinical education.

Questioning and feedback. Questioning and feedback is an instructional strategy that facilitates learning by asking questions and providing feedback to students. This first part of the instructional strategy is strategic questioning. Strategic questioning involves asking three types of questions in a sequential manner: “what” questions, “so what” questions, and “now what” questions (Priest & Gass, 1997). The premise of “what” questions is to confirm and assess students’ level of knowledge, skill, and understanding of fundamental concepts. “So, what” questions are used to help students evaluate information, determine relevancy, and consider different options. Lastly, “now what” questions provide an opportunity for students to practice and develop critical thinking skills (Priest & Gass, 1997). Thus, strategic questioning serves as a catalyst for
learning by prompting the student to gather and think about the information being presented to them.

The second aspect of the instructional strategy is feedback. Feedback is information an instructor provides to a student regarding their knowledge, skill, or acquisition (Ende, 1983). Feedback is commonly given in two forms: corrective or directive. Corrective feedback is used to inform a student that what they are stating or doing is incorrect. Directive feedback is given to guide a student towards the correct answer or to refine their response or actions (Barnum & Graham, 2008). Therefore, the purpose of feedback is to provide students clarity during the learning experience.

When united, questioning and feedback create a learning loop. The learning loop begins with the instructor asking strategic questions. The student then responds to the questions and receives confirmation or additional guidance from the instructor. The learning loop is then closed when the instructor provides feedback. In addition, the learning loop can continually repeat as long as the instructor asks questions, the student responds, and the instructor provides feedback (Barnum et al., 2009).

Within athletic training, Barnum et al. (2009) provided a review of literature on the integration of questioning and feedback in clinical education. Barnum and colleagues discussed the use of questioning and feedback as an instructional strategy that stimulates critical thinking and develops clinical reasoning skills. In particular, questioning and feedback improves clinical reasoning by teaching students how to recognize, gather, synthesize, and utilize information to make well-educated decisions. Lastly, Barnum and colleagues explained how questioning and feedback can be applied to clinical education
experiences. However, the literature on questioning and feedback as an instructional strategy is limited to a single review of literature, thus no determination on its use in athletic training clinical education can be made. Although, there is evidence that supports the use of feedback in clinical education.

Athletic training education has also studied feedback through direct observations in a clinical setting. In addition, clinical education has examined students’ and preceptors’ perceptions of feedback. Direct observations of student and supervising AT interactions in a clinical environment revealed a total of 88 feedback statements in 45 hours and 10 minutes of observations (Nottingham & Henning, 2014a). During direct observations the majority of feedback was found to be in public and given immediately after a student completed a skill. In addition, the main purpose of feedback was to confirm behavior, reinforce performance, or promote improvement. Furthermore, 66% of feedback was related to students’ clinical skill performance, while only 16% stimulated critical thinking (Nottingham & Henning, 2014a). These findings establish the natural occurrence of feedback within clinical education.

In addition, feedback was primarily used to assure or improve students’ knowledge, skill, and acquisition. Interestingly, examination of students’ and preceptors’ perceptions of feedback in clinical education revealed similarities seen in direct observations. Both parties perceived feedback to be a vital part of the learning experiences because it advances, confirms, and corrects student behavior (Nottingham & Henning, 2014b). In addition, students stated the feedback they received increased their confidence and helped them recognize areas that needed improvement. Furthermore,
preceptors stated they preferred giving immediate feedback because it was easier to discuss performance at the time of the event (Nottingham & Henning, 2014b). Thus, the findings of students’ and preceptors’ perspectives reinforce what was found through direct observations. The evidence also supports the use of feedback since student and preceptors stated they prefer the types of feedback that are already occurring in clinical education.

In brief, both techniques, questioning with feedback and feedback alone, require interactions between the student and preceptor, which supports the use of engagement. In addition, questioning and feedback was found to foster critical thinking and develop clinical reasoning and decision-making skills. Therefore, it can be determined that these methods can be used as instructional strategies that facilitate learning through engagement and critical thinking. However, these findings are limited to a single study; thus, more research is needed to establish its use in clinical education.

**Evidence-Based Medicine**. Athletic training is based on the principle of EBM. EBM is an interdisciplinary approach to clinical practice that uses the best available research evidence, clinical expertise, and patient’s needs to provide quality health care (Sackett, Rosenberg, Gray, Haynes, & Richardson, 1996). In addition, accreditation standards and competency requirements mandate the integration of EBM into didactic and clinical education. Thus, both areas of education must consider pedagogical and instructional strategies that effectively deliver EBM content.

Currently, didactic education demonstrates the use of EBTM as an instructional strategy to teach EBM concepts (Manspeaker et al., 2011a, 2011b). However, clinical
education has yet to identify an EBM instructional strategy. Although clinical education has not examined the implementation of an EBM instructional strategy, there is evidence that identifies instructional strategies that are naturally occurring in the clinical setting.

Hankemeier and Van Lunen (2011) examined preceptors’ perspectives of EBM concepts in clinical education. In general, preceptors believed EBM to be important because it validates the profession, improves patient care, and enhances students’ clinical education experiences. In addition, preceptors reported using self-discovery, critical thinking, shared information, and modeling as instructional strategies when teaching students about EBM (Hankemeier & Van Lunen, 2011). Self-discovery was used to stimulate intellectual curiosity and involve students in the literature search process. Critical thinking was achieved by asking students to explain and justify why they selected a particular treatment. Sharing of information occurred through staff meetings, group discussions, and sharing of peer-reviewed articles. Lastly, modeling was incorporated by having students observe preceptors’ use of EBM in clinical practice. In particular, preceptors discussed the importance of modeling behaviors of EBM so students would understand its direct relationship to patient care (Hankemeier & Van Lunen, 2011). Thus, these findings reveal the use of various instructional strategies preceptors use to teach students EBM in clinical education.

In sum, clinical education uses a variety of instructional strategies to teach EBM concepts (Hankemeier & Van Lunen, 2011). In addition, all of the instructional strategies mentioned incorporate either engagement with individuals or content and critical thinking skills. Thus, it can be determined that self-discovery, critical thinking, sharing of
information, and modeling as instructional strategies that facilitate learning through engagement and critical thinking. However, there is no evidence to support the application of these instructional strategies on EBM in clinical education, thus highlighting the need for more original research on instructional strategies in clinical education.

**Didactic and clinical instructional strategies.** A complete review of athletic training education literature reveals a wide range of instructional strategies. Didactic education provides literature on simulations, EBTM, multimedia technology, PLAM, IF-AT, technical and tactical skills model, and use of PAS as instructional strategies (Armstrong & Jarriel, 2015; Bowman & Laurent, 2011; Lafave et al., 2013; Manspeaker et al., 2011a, 2011b; Tamura et al., 2014; Tivener & Gloe, 2015b; Walker & Weidner, 2010; Walker et al., 2015). Clinical education discusses the use of feedback, self-discovery, critical thinking, sharing information, and modeling as instructional strategies (Hankemeier & Van Lunen, 2011; Nottingham & Henning, 2014a). Although the literature includes a variety of instructional strategies, simulations, EBTM, PLAM, and PAS were the only instructional strategies found to improve students’ knowledge (Lafave et al., 2013; Manspeaker et al., 2011a; Tamura et al., 2014; Tivener & Gloe, 2015b). However, all of the instructional strategies witnessed in didactic and clinical education incorporate some form of engagement into learning experiences. In addition, simulations, interactive applications, technical and tactical skills model, and PAS use active learning to promote learning. Whereas, simulations, EBM, technical and tactical skills model, and questioning and feedback were used to develop learning experiences
that stimulated critical thinking, clinical reasoning, and decision-making skills. Thus, it can be determined that athletic training education advocates for instructional strategies that facilitate learning through engagement, active learning, and critical thinking.

Lastly, the bulk of original research on instructional strategies is primarily found in didactic education, thus, highlighting the need for more original research in clinical education. Interestingly, closer investigation of instructional strategies exposes a predominate theme that was also witnessed in pedagogical approaches.

**Athletic Training Education Pedagogical Approaches and Instructional Strategies**

The collective review of instructional strategies demonstrates teaching methods that center the learning experiences around the student. By structuring learning experiences around the student, athletic training education advocates for student-centered education. In addition, the literature on instructional strategies reveals the use of engagement, active learning, and critical thinking to facilitate learning. These same themes were observed when examining pedagogical approaches in athletic training education.

Holistic examination of the athletic training education literature (didactic and clinical education) strongly advocates for the use of pedagogical approaches and instructional strategies that integrate engagement into learning experiences. In addition, the literature also advocates for active learning and critical thinking. However, there is deeper support for use of engagement in athletic training education. Based on these findings, it is evident that the athletic training education endorses the use of pedagogical
approaches and instructional strategies that facilitate learning through engagement, active learning, and critical thinking.

**Gaps in Athletic Training Education Literature**

Currently, there is an overall lack of original research on pedagogical approaches and instructional strategies in athletic training education. Specifically, there is minimal to no evidence on pedagogical approaches and instructional strategies in clinical education. The lack of evidence in clinical education could be due to the informal environment of clinical education. Pedagogical approaches and instructional strategies are commonly used in a traditional classroom setting, thus having the ability to examine this within clinical education is challenging. Another possible explanation there is minimal research in clinical education could be due to an absence of teacher education. Preceptors rarely have any formal training in education. Thus, the majority of preceptors are completely unaware of teaching methods. In addition, the evidence on students’ and preceptors’ perspectives of clinical experiences is extremely limited (Benes et al., 2014; Carr, Thomas, Paulsen, & Chiu, 2016; Mazerolle, Bowman, & Benes, 2014). Specially, there is only one study that examines both preceptors’ and students’ perspectives of clinical education experiences (Benes et al., 2014), thus, demonstrating the need for more original research on pedagogical approaches and instructional strategies in clinical education from the student and preceptor perspective.

**Theoretical Framework**

The social learning theory (SLT) was used as the theoretical framework for the current study. Bandura (1977) defined SLT as a cognitive process that occurs in a social
context comprised of personal, behavioral, and environmental factors. In other words, how people, and the people around them act and engage in the environment impacts learning. In addition, SLT is based on two constructs: observational learning and mediational processes. Observational learning is when an individual learns a behavior through direct experiences. During direct experiences individuals observe the behaviors of others, which is referred to as modeling (Bandura, 1977). Thus, observational learning facilitates learning through modeling. STL also includes a mediational process, which occurs after observational learning. During mediational processing an individual goes through a cognitive process that helps them determine if they should imitate the behavior they observed during modeling (Bandura, 1977). Therefore, mediational processing stresses the use of critical thinking as part of the learning process. Inclusion of observational learning and mediational processes into SLT highlights the role behavior and cognitive processing has during learning experiences. Thus, based to its constructs, the SLT (social interactions, observational learning, and mediational process) was used as the theoretical framework for the current study.

Engagement can be defined many ways. Some claim engagement means “to induce to participate” (“Engagement,” 2003), whereas others state engagement indicates, “to occupy the attention or efforts of a person or persons” (“Engage,” 2017). Thus, engagement is often interpreted as a physical interaction or activity. Due to the discrepancy in terminology, engagement and active learning are often considered the same within education. Since the premise of the current study is based on engagement, it is imperative that I clearly define what engagement means. Therefore, I used STL to
define engagement. However, it is important to note that this definition of engagement differs from the one provided for the review of literature.

For the current study, engagement was based on mediational processes, which is a cognitive process that occurs in a social context comprised of personal, behavior, and environmental factors. In addition, engagement included a series of events where the individual critically thinks during the learning experience. Defining engagement through the STL provided a strong foundation to support the study while also informing the research questions and methodology. Specifically, this definition of engagement was used as the theoretical lens for which the data was collected, analyzed, and interpreted.

Lastly, STL was used as the theoretical framework for multiple reasons. First, STL theoretically aligns with my educational philosophy. Throughout my doctoral studies and practice as a teacher, I have come to understand learning as a social process. Therefore, I believe it is crucial to choose a framework that identifies with a social constructive perspective. Second, the current study was qualitative research, which required me, as the researcher, to be the data collection tool. Thus, it was imperative that I selected a theoretical framework that views learning the same way I do. Third, SLT is supported in athletic training education literature. Although, the SLT is only referenced a few times (Bates, 2014; Monaco & Martin, 2007; Peer & McClendon, 2002), thorough examination of the literature reveals that the majority of teaching methods integrate some form of social interaction during the learning process. In particular, the evidence vastly supports the use of pedagogical approaches and instructional strategies that facilitate learning through the use of social interaction, observational learning, and cognitive
processing. Thus, the STL was used as the theoretical framework to structure, support, and guide this study.
CHAPTER III

METHODS

The purpose of the current study was to explore the role of engagement in clinical education in Kent State University’s (KSU) athletic training program (ATP). Therefore, it is vital that the data come from individuals who participate in clinical education experiences. In addition, engagement (as defined by the SLT) is based on personal, behavioral, and environmental factors, thus how an individual depicts engagement can vary based on his or her own experiences. Therefore, I selected a methodology that permitted individuals to express their personal meaning of engagement based on their lived experiences.

Research Paradigm and Approach

The intent of qualitative research is to “understand human experience to reveal both the process by which people construct meaning about their worlds and report what those meanings are” (Hull, 1997, p. 1). In other words, qualitative research allows us to understand an experience from the perspective of the person who lived the experience. Qualitative research directly relates to this study because the purpose is based on individuals’ lived experiences. Therefore, I used qualitative research because it allowed each individual to express his or her personal meaning of engagement based on his or her lived experiences.

In addition, this qualitative study is interpreted through a social constructivist perspective. In social constructivism, the goal is to understand the world through the meanings of personal experience. To achieve this goal, the researcher relies on
participants’ views of the experience (Creswell, 2013). In addition, social constructivists believe “that multiple realities exist that are inherently unique because they are constructed by individuals who experience the world from their own vantage point” (Hatch, 2002, p. 15). According to Hatch, social constructivists believe each individual interprets experiences differently. Furthermore, social constructivists use coconstruction during the research process to make meaning of lived experiences. Coconstruction is when the reality of an experience is constructed through mutual engagement of the researcher and participant (Hatch, 2002). Therefore, the meaning of an experience is crafted from the interactions between the researcher and participant. Coconstruction is crucial to the current study because individuals often struggle to make sense of their experiences. Thus, coconstruction allowed me, the researcher, to assist participants in making sense of their clinical education experiences.

Lastly, the social constructivist perspective is interpreted through the Social Learning Theory (SLT). Social constructivism believes creation of knowledge happens through social interactions (McKinley, 2015). This is echoed in the STL, which also believes learning occurs in a social context comprised of personal, behavior, and the environment factors (Bandura, 1977). Thus, examination of social constructivism and the STL reveals similar stances on knowledge and learning. That is why this study used the SLT as the theoretical framework since it aligned with social constructivism.

**Study Design**

A case study design was used for the research study. A case study is defined as, “the exploration of a bounded system” (Schram, 2006, p. 107). Within the current study,
the case is defined as the clinical education experiences of an ATP. In addition, a case study focuses on understanding an experience from the perspective of individuals who have lived the experience (Schram, 2006). A case study design allowed me to study clinical education through the perspective of the individuals who have participated in these experiences. Furthermore, Schram described a case study as, “an analytic focus on an individual event, activity, episode, or other specific phenomenon” (p.106). Within this study, the event is engagement in clinical education. Specifically, engagement involves a series of events where the student uses cognitive processing skills during the learning experience. An example of engagement in clinical education would be the following series of events: a student performs an evaluation on a patient, diagnoses the patient based on the findings of the evaluation, develops a treatment plan, and then implements the treatment plan.

Lastly, a case study uses purposeful sampling when selecting the case. The case was specifically chosen by the researcher to ensure it has the characteristics to properly answer the study’s research questions (Merriam & Associates, 2002). Thus, identification of an ATP that has the attributes to accurately answer the research questions was essential to obtaining data that best answers my line of inquiry. That is why KSU’s ATP was selected as the case for the current study.

Case

KSU’s ATP was chosen because it met the criteria for a quality ‘case’ for this study. In particular, KSU’s ATP provides comprehensive clinical education experiences based on several characteristics: student enrollment, quality of preceptors, and number of
clinical education sites. KSU’s ATP is comprised of 45 professional phase students, 40 pre-professional phase students, six faculty, five teaching assistants, 44 preceptors, and 25 clinical education sites. Professional phase students are individuals who have been formally accepted into the ATP, whereas pre-professional phase students are those currently applying for admittance into the ATP. The ATP’s large student enrollment provided an extensive athletic training student (ATS) population. KSU’s ATP also has over 40 preceptors, which provided a diverse population based on years of experience, educational background, and clinical skills. Furthermore, the ATP has numerous clinical education sites in the three of the most common athletic training employment settings (i.e., college athletics, high schools, and rehabilitation clinics). Additionally, KSU’s ATP was also used because it has the qualities needed for graduate education.

Over the next four years, athletic training will transition to a graduate education model. In 2015, the Athletic Training Strategic Alliance announced that an entry-level Bachelor’s degree would be removed as a route to athletic training certification. Instead, a Master’s in Athletic Training, referred to as Professional Masters (PM), will be required to obtain entry into the field of athletic training. As a result of this decision and in preparation for the degree transition, CAATE has released the PM accreditation standards. Based on the PM accreditation standards, ATPs will have to comply with criteria that demand programs to have a large number of faculty, preceptors, students, and clinical education sites. Specifically, ATPs will be required to have a minimum of three core faculty. Core faculty are defined as full-time faculty who are “appointed to teach athletic training courses, advise, and mentor students in the athletic training program”
KSU’s ATP met this standard by having five core faculty. In addition, the PM accreditation standards contain numerous content standards and competencies that are tied to clinical education experiences. These requirements include exposure to diverse patient populations (i.e., race, gender, socioeconomic status) and various areas of medicine (i.e., pediatrics, behavioral health, and performance enhancement; CAATE, 2018), thus, emphasizing the need for ATPs to have a vast number of clinical education sites and preceptors in order to maintain accreditation.

Therefore, KSU’s ATP was selected as the case for the current study for two reasons. First, KSU’s ATP provides quality and extensive clinical education experiences to their students. This was crucial to selecting a case, as it provided the depth and breadth needed to holistically explore the role of engagement in clinical education. Second, KSU’s ATP has the attributes of graduate education. As athletic training education transitions to a graduate education model, research should be conducted in contexts that have the features of graduate education. It is also imperative that the research site supports a graduate education model because it allows the findings to be relevant and applicable to athletic training education in the future.

**Participants**

Participants were students and preceptors in KSU’s ATP. Preceptors’ and students’ perspectives were used because they are the individuals who are physically present during clinical education experiences. Both perspectives were used to provide a comprehensive depiction of engagement in clinical education.
A total of 14 participants were recruited for the current study: seven students (four juniors and three seniors) and seven preceptors (three collegiate athletics, two high school, and two rehabilitation clinic) (see Table 1).

Table 1

Participants Demographics

<table>
<thead>
<tr>
<th>Name</th>
<th>Preceptor</th>
<th>Student</th>
<th>Academic Level</th>
<th>Setting</th>
</tr>
</thead>
<tbody>
<tr>
<td>Hannah</td>
<td>X</td>
<td></td>
<td></td>
<td>High School</td>
</tr>
<tr>
<td>Jamie</td>
<td>X</td>
<td></td>
<td></td>
<td>High School</td>
</tr>
<tr>
<td>Evan</td>
<td>X</td>
<td></td>
<td></td>
<td>Rehabilitation Clinic</td>
</tr>
<tr>
<td>Rachael</td>
<td>X</td>
<td></td>
<td></td>
<td>Rehabilitation Clinic</td>
</tr>
<tr>
<td>Jackson</td>
<td>X</td>
<td></td>
<td></td>
<td>College Athletics</td>
</tr>
<tr>
<td>Dean</td>
<td>X</td>
<td></td>
<td></td>
<td>College Athletics</td>
</tr>
<tr>
<td>James</td>
<td>X</td>
<td></td>
<td></td>
<td>College Athletics</td>
</tr>
<tr>
<td>Corey</td>
<td>X</td>
<td>Junior</td>
<td></td>
<td>High School</td>
</tr>
<tr>
<td>Charlene</td>
<td>X</td>
<td>Junior</td>
<td></td>
<td>High School</td>
</tr>
<tr>
<td>Alison</td>
<td>X</td>
<td>Junior</td>
<td></td>
<td>Rehabilitation Clinic</td>
</tr>
<tr>
<td>Kascie</td>
<td>X</td>
<td>Junior</td>
<td></td>
<td>Rehabilitation Clinic</td>
</tr>
<tr>
<td>Rita</td>
<td>X</td>
<td>Senior</td>
<td></td>
<td>College Athletics</td>
</tr>
<tr>
<td>Jasmine</td>
<td>X</td>
<td>Senior</td>
<td></td>
<td>College Athletics</td>
</tr>
<tr>
<td>Stanley</td>
<td>X</td>
<td>Senior</td>
<td></td>
<td>College Athletics</td>
</tr>
</tbody>
</table>

I purposely recruited a minimum of two preceptors from each clinical setting (i.e., college athletics, high school, & rehabilitation clinic) to provide equal depiction of the
preceptor population. I also explicitly recruited students of junior and senior academic levels because they were individuals who had appropriate exposure in clinical education. Juniors had completed two semesters of clinical education experiences. In addition, juniors were currently enrolled in their third semester of school and fulfilling their clinical education requirements at a high school or rehabilitation clinic. Seniors had completed four semesters of clinical education experiences and were enrolled in their fifth semester of school and accomplishing their clinical education requirements within college athletics. Seniors had also already been exposed to college athletics, a high school, and a rehabilitation clinic during their previous two years.

Sophomores were not included because they had not been exposed to the clinical education experiences required for the study. As sophomores, students have only received one year of clinical observations. During clinical observations, student involvement is limited to observational learning, where students learn by watching the behaviors of others. Sophomores have not had the opportunity to engage in mediational processes, which integrates cognitive processing into learning experiences. It was imperative that student participants were exposed to clinical education experiences that provided opportunities for mediational processing since the current study defines engagement based on the constructs of the SLT. Therefore, only junior and seniors were recruited since they had been exposed to the types of clinical education experiences needed to accurately answer the study’s research questions.

Recruitment of preceptor and student participants occurred separately during the Fall 2017 semester. Recruitment of preceptor participants occurred during the first week
of the semester. To recruit preceptor participants, I e-mailed all preceptors associated with KSU’s ATP and informed them about the research study. When contacting the preceptors through e-mail, I provided them with information that introduced, outlined, described, and explained the purpose of the study. The e-mail concluded by asking the preceptor for voluntary participation in the study. Preceptors who decided to participate in the study contacted me by e-mail. After the first recruitment the required number of preceptor participants was not met, therefore a follow-up e-mail was sent to preceptors during the third week of the semester to recruit additional preceptors.

Recruitment of student participants also occurred during the first week of the academic semester. To recruit student participants, I visited the Practicum III and Internship I athletic training courses for junior and senior students. During classroom visitations, I informed the students about the research study by providing them the identical information I gave to preceptors during their recruitment. I also answered any questions the students had about the study. I concluded the classroom visitation by asking students for voluntary participation in the study. Students who decided to participate in the study spoke to me in person or contacted me through e-mail. After the first recruitment the required number of student participants was met, therefore follow-up recruitment was not necessary.

Throughout all forms of recruitment, I strongly emphasized that participation in the study is voluntary, and at any point in time a participant can request to be removed from the study. In addition, I informed all participants that their involvement in the study would have no influence on our professional relationship and their responses would not
be shared with other faculty, preceptors, or students. Furthermore, I notified the preceptor participants that their involvement in the study would have no impact on their use as a preceptor and/or clinical education site in the future. Additionally, I told student participants that their involvement in the study would have no effect on their grades in any of their athletic training courses. Finally, consent forms for all participants were obtained prior to any data collection.

**Data Collection**

The current study used two forms of data collection to inform my research questions (Table 2). Data gathered from interviews and observations (Table 3) were used to explore the role of engagement in clinical education in KSU’s ATP. Data collection occurred over the course of the Fall 2017 academic semester. In addition, data collection is discussed in the order it was collected, which was initial interviews, observations, informal interviews, and follow-up interviews.

Table 2

*Research Questions and Data Collected*

<table>
<thead>
<tr>
<th>Research Questions</th>
<th>Data Collected to Answer Question</th>
</tr>
</thead>
<tbody>
<tr>
<td>To what extent are students engaged in their clinical experiences, and if engaged, how do they describe that engagement?</td>
<td>Semi-structured interviews with students and preceptors; Observations of clinical education experiences; Informal interviews with students</td>
</tr>
<tr>
<td>What role(s) does engagement have in athletic training clinical education at KSU?</td>
<td>Semi-structured interviews with students and preceptors</td>
</tr>
</tbody>
</table>
### Table 3

**Data Collection Chart**

<table>
<thead>
<tr>
<th></th>
<th>Preceptor Interviews</th>
<th>Student Interviews</th>
<th>Observations</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Where</strong></td>
<td>Clinical education site (located at preceptor’s place of employment)</td>
<td>Athletic Training Classroom/ Competency Lab</td>
<td>Clinical education site locations (college athletics, high schools, rehabilitation clinics)</td>
</tr>
<tr>
<td><strong>When</strong></td>
<td>Initial: 4-7 weeks Follow-up: 9-14 weeks, following observations</td>
<td>Initial: 5-8 weeks Follow-up: 9-14</td>
<td>Observations: 7-12 weeks, after initial interviews and prior to follow-up interviews; scheduled within 7 days of each other</td>
</tr>
<tr>
<td><strong>How Often</strong></td>
<td>2 interviews per participant (initial &amp; follow-up); interviews lasted 30-60 minutes</td>
<td>2 observations per participant; observations lasted 65-160 minutes; informal interviews with students followed each observation</td>
<td></td>
</tr>
<tr>
<td><strong>Approach</strong></td>
<td>Semi-structured format with use of probes when necessary; Incorporation of responsive interviewing approach</td>
<td>Non-participatory role</td>
<td></td>
</tr>
<tr>
<td><strong>Data Collection Tool(s)</strong></td>
<td>Hand written field notes; note taking involved documenting the participants verbal responses &amp; non-verbal actions; all interviews were audio-recorded and transcribed</td>
<td>Hand written field notes; note taking involved descriptive &amp; reflective notes; descriptive notes were based on participants’ behaviors and the environment; reflective notes were interpretations of the participants’ behaviors and what they meant</td>
<td></td>
</tr>
</tbody>
</table>

**Interviews**

Interviews were used to collect qualitative data on students’ and preceptors’ perspectives of clinical education experiences. Hatch (2002) stated the purpose of an interview is to, “uncover the meaning structures that participants use to organize their experiences and make sense of their worlds. These meaning structures are often hidden
from direct observation and taken for granted by the participants” (p. 91). In other words, interviews are used to reveal information on individual’s feelings and emotions of lived experiences, thus providing data that cannot be objectively measured. Therefore, interviewing is the ideal method to gather data on individuals’ perspectives since the data comes directly from the individual who has lived the experience.

I used interviewing as a data collection tool because it allowed me to gather authentic data on students’ and preceptors’ perspectives of clinical education experiences. In addition, the premise of the study is engagement. Since a component of engagement is based on personal factors, it was imperative to collect data from individuals who have lived the experience. Furthermore, interviewing was used because it let participants express their personal meaning and understanding of engagement in clinical education, which delivered data that best answers my line of inquiry.

A total of 28 interviews were conducted during the Fall 2017 academic semester. Data collection involved two interviews (initial and follow-up) per student and preceptor participant. Student interviews were held in KSU’s ATP classroom or conference room. Preceptor interviews took place at the clinical education site in the preceptor’s athletic training facility or office. All interview data were audio recorded and I took handwritten field notes. Interviews ranged from 30–60 minutes and totaled 500 pages of transcriptions.

**Initial Interviews**

Student and preceptor initial interviews were held at the beginning of the semester and were conducted prior to observations. A semi-structured format was used for the
initial interviews (See Appendices A & B). I began the interview by introducing myself and clarifying any questions the participant had regarding the research study or structure of the interview. I then asked basic background questions to allow the participant to become comfortable and familiarized with the interview process. Following these initial questions, I asked structured questions about clinical education experiences, such as to describe their clinical education experiences and define engagement in clinical education. In addition, I asked specific questions to understand personal, behavioral, and environmental factors that promote or hinder engagement in clinical education.

Following the participant’s responses to the structured questions, I used probes to gain clarity and additional insight into their responses.

I also incorporated responsive interviewing throughout the interview process to reveal more depth and breadth in participants’ responses. Rubin and Rubin (2012) defined responsive interviewing as, “a style of qualitative interviewing. It emphasizes the importance of building a relationship of trust between the interviewer and interviewee that leads to more give-and-take in the conversation” (p. 36). To build a trusting relationship the researcher encourages conversation and reacts to what the participant says by asking additional questions. Thus, responsive interviewing was used to conceptualize new questions through active listening. I did this by engaging in conversation that was guided by participants’ responses. For example, I asked a student to define engagement in clinical education and the reply was, “it’s applying what you learned in the classroom to real people.” I then questioned, “What do you mean by apply?” in which the answer was, “you know . . . doing stuff with your hands and brain.”
I then listened and responded by asking more questions such as: what does application with your hands looks like, what is the difference between hand and brain application, and what do you mean by real people. This allowed the participant to provide more details, which resulted in deeper depictions of engagement.

Responsive interviewing also creates a peaceful and safe environment since participants can tell the researcher is actively engaged. This environment encourages participants to speak, thus providing more detailed responses (Rubin & Rubin, 2012). For the current study, a safe environment was created through actively listening and questioning as previously mentioned, but I also used general conversation to allow participants to become comfortable. For example, I asked a preceptor, “Why do you teach your student using hands-on skills and discussion?” They replied, “Because that’s what my high school athletic trainer did and it really helped me learn.” I continued to listen and asked additional questions regarding their teaching practices yet, at one point the conversation started to go in a different direction. The preceptor began talking about their experiences of being employed at a Division III university by discussing the sports they covered, the size of the university, and how long they were employed there, all of which their responses had no relation to the role of engagement in clinical education. However, I continued to listen and made comments to demonstrate I was being attentive and cared about what they had to say. I said things such as “covering three sports must have been challenging,” “it must have been nice to work at a small university,” and “why did you stay there for only two years?” As a result, the participant provided more specific and thorough responses as the interview continued. Thus, I incorporated a
responsive interview approach into the current study to gather richer, thicker data on participants’ perspectives of athletic training clinical education experiences.

**Observations**

Observations were used to collect data on engagement in clinical education in KSU’s ATP. Hatch (2002) stated, “The goal of observation is to understand the culture, setting, or social phenomenon being studied from the perspectives of the participants. Observers attempt to see the world through the eyes of those they are studying” (p. 72). In other words, observations provide a way for the researcher to experience situations from the viewpoint of their participants. Observations of clinical education experiences are necessary to achieve the purpose of the study, which is to explore the role of engagement in clinical education. The only method to gather data on the depiction of engagement is to observe clinical education experiences first-hand. Thus, I used observations as a form of data collection, because it permitted me to gather data that attains the purpose of the study and best answers my research questions.

A total of 16 observations were conducted during the Fall 2017 academic semester. Data collection involved two observations per preceptor and student. There were 12 participants (six students and six preceptors) who were considered a preceptor-student match. A preceptor-student match was a preceptor and student who were already assigned to each other for clinical education experiences. An example of this would be the preceptor for women’s basketball and the student assigned to women’s basketball both volunteering to be participants in the study. Thus, two observations per preceptor-student match were performed since the preceptor and student could both be
watched during one observation. Preceptor-student matches accounted for 12 observations. The remaining four observations were of individual (unmatched) student and preceptor participants. All observation data were collected by hand written field notes. Data were only recorded from observations of participants who have volunteered and provided consent for the study. Data on other individuals who were present at the clinical education site was not recorded. Observations ranged from 65–160 minutes.

Observations occurred after initial interviews and prior to follow-up interviews. All observations were scheduled within seven days of each other. However, due to unanticipated events, two observations had to be rescheduled, which resulted in them occurring 15 days apart. Observations took place at the participant’s clinical education site (i.e., college athletics, high school, rehabilitation clinic). Specifically, eight observations were performed in collegiate athletics, four observations were at high schools, and four occurred in rehabilitation clinics. Location of observations varied depending on the needs of the clinical education site and included: the athletic training facility, athletic fields/courts, treatment/rehabilitation areas, evaluation rooms, gymnasiums, and football stadiums. Observations also involved coverage of different events such as: practices, games, pre and post-practice treatment, and rehabilitation sessions.

When conducting observations, I had a non-participatory role as the researcher. I did not interact, converse, or engage with students, preceptors, or patients. Observations focused on the environment, participants, activities, and interactions that occurred. Data were collected by hand written descriptive and reflective field notes. Descriptive notes
were visual descriptions of the participant’s behavior and the environment of the clinical education site. Reflective notes were interpretations of what the participant’s behaviors could possibly mean (See Appendix C). In addition, I wrote questions I wanted to ask participants at the end of the observation or at follow-up interviews.

During observations I watched for behaviors, actions, and interactions that represented themes that had emerged from initial interviews. These themes involved aspects related to the active learning, application of knowledge, forms of engagement, preceptor/student relationship, and supervised autonomy. For example, I witnessed a student providing patient care with minimal assistance from their preceptor, which exemplified supervised autonomy. In addition, I observed a student watching their preceptor apply a brace to a patient and afterwards they discussed the purpose and reasoning for the brace. This experience included observations and discussion, which were identified as forms of engagement during initial interviews. I also took field notes of all behaviors that suggested engagement even if they had not been previously identified by participants.

I also observed for aspects that demonstrated engagement based on the constructs of the STL, which included: social interactions, observational learning, and mediational processing. Social interactions were any communication or contact a participant had with another individual (e.g., preceptor, patient, peer, etc.). Observational learning is when an individual learns by watching the behaviors and actions of another. Therefore, I observed for incidences when students were viewing others. An example of this would be a student watching his or her preceptor perform an evaluation on a patient. Lastly, mediational processing is a cognitive process that involves a series of higher mental
thought processes (i.e., problem solving, memory, perception, critical thinking, language, attention; Gerrig & Zimbardo, 2002). Since cognitive processing takes place within an individual’s mind, it is difficult to establish attributes that physically represent the event. However, some behaviors do suggest cognitive processing is happening (e.g., furrowing eyebrows, wide-eyed, and supporting head with hand). Therefore, I watched for these characteristics when observing for mediational processes. Furthermore, it is clear that observations alone cannot determine the presence of mediational processes. That is why I conducted brief informal interviews with students at the end of each observation.

Finally, observations aided in completing a richer, thicker examination of engagement in clinical education in two ways. First, observational data assisted with triangulation of data. Triangulating data occurred by comparing and contrasting participants’ responses from interviews to observational data. Second, observational data were used to create questions for follow-up interviews, which provided additional clarity, details, and insights on participants’ perspectives of engagement in clinical education. Thus, observations offered more depth and breadth by providing more opportunities to thoroughly examine engagement in clinical education.

**Informal Interviews**

Informal interviews served two purposes: (a) to identify if mediational processes were occurring during observations and (b) to better understand the behaviors I witnessed. To achieve this, I referenced actions and behaviors seen during observations and asked students to rate their engagement using the scale in Figure 1, which was initially piloted with sophomores the previous semester. For example, I watched a
student tape an ankle during observations. At the informal interview, I asked the participant to rate their engagement when partaking in that task using the scale (Figure 1). After the student responded, I asked additional questions to further understand why they identified the task as disengaged, not contributing, contributing, or engaged.

![Figure 1. Scale used to classify students’ level of engagement during clinical education experiences.](image)

I also asked students why they did certain things to better understand their behaviors. For instance, I noticed when a patient entered the athletic training facility the student was always the first one to interact with the patient by asking them what they needed. Thus, I asked the student why they did this to further understand their reasoning and decision making behind their behaviors.

**Follow-Up Interviews**

Follow-up interviews occurred within two weeks of observations and were used to triangulate data by providing an opportunity to clarify and verify participants’ responses from initial interviews, observations, and informal interviews. Follow-up interviews were conducted after observations to gain additional insight on engagement in clinical education based off of themes that had emerged during data analysis of initial interviews and observations. Thus, follow-up interviews were used to ask additional
questions to reveal consistencies and inconsistencies amongst participants’ perspectives of engagement in clinical education.

Protocols for follow-up interviews were specific to each participant (See Appendices D & E). Questions were explicitly derived from each participant’s responses during initial interviews and behaviors witnessed during observations. I prepared follow-up interview protocols by reviewing my field notes and listening to audio recordings of initial interviews for each participant. In addition, I also reexamined my notes from initial data analysis, which is discussed later during data analysis. Having a follow-up interview tailored to each participant allowed me to gain clarity and ensure trustworthiness of data.

Identical to initial interviews, follow-up interviews used a semi-structured format. I began by asking the participant if they had any questions about the current research study. I then explained the purpose of the follow-up interview was to verify responses from their initial interview, clarify aspects witnessed during observations, and gather additional insight on their perspective of engagement in clinical education. I then asked basic questions to allow the participant to become relaxed in the interviewing environment. Next, I referenced and verified the participant’s responses from their initial interview. After clarifying information from the initial interview, I asked specific questions about their actions and behaviors witnessed during observations.

For students, I asked questions to verify responses from their informal interview. To achieve this, I had the student rate their level of engagement for the same actions and behaviors I referenced at informal interviews. I also asked additional questions to further
understand why they classified the experience as disengaged, not contributing, contributing, or engaged. I then asked students why they did certain things to gain clarity and better understand their behaviors. Referencing of behaviors and identification of engagement was conducted during follow-up interviews to validate students’ responses from informal interviews and establish trustworthiness of the data.

For preceptors, I asked questions to gain insight into their role as a preceptor. Similar to students, I stated an action or behavior I had observed and then asked the preceptor about that experience. For example, I witnessed a student asking their preceptor a question about electrical stimulation and instead of answering the question the preceptor responded by asking the student rhetorical questions. Therefore, I asked the preceptor why they responded by not answering the question and instead asking rhetorical questions. After the preceptor’s response I then asked more questions to further understand the reasoning behind their behaviors.

Lastly, I questioned students and preceptors about themes that had developed during initial data analysis, which included the preceptor/student relationship, supervised autonomy, feeling comfortable, and trust. I also had participants identify one factor that promotes and hinders engagement in clinical education the most. I then concluded follow-up interviews by thanking the participant for their involvement in the study.

Data Analysis

Qualitative data analysis is defined as, “Organizing and interrogating data in ways that allow researchers to see patterns, identify themes, discover relationships, develop explanations, make interpretations, mount critiques, or generate theories” (Wolcott, 1995,
Thus, the purpose of qualitative data analysis is to interpret, understand, and make meaning of data by developing themes, relationships, and patterns. In particular, grounded theory analysis uses a strategic process to closely examine data through inductive measures.

For the current study, I used data analysis stemmed from Strauss and Corbin’s (1990) grounded theory approach. A grounded theory approach (Strauss & Corbin, 1990) was used for initial and final data analysis. Initial data analysis began during data collection and continued until follow-up interviews were finished. After data collection was completed I performed final data analysis. Throughout data analysis I took notes on categories and/or themes that emerged from the data. I also used a research journal (refer to trustworthiness section) to document my feelings, emotions, and thoughts that could result in bias when interpreting data. In addition, I incorporated various strategies during each part of data analysis, which is described in more detail below.

**Initial Data Analysis**

For initial data analysis I performed open coding at three points during data collection: initial interviews, observations, and follow-up interviews. Data analysis began after initial interviews to provide insight into categories and/or themes that were developing. For each individual, data analysis began on the day of initial interview and was completed within one week. On the same day of the initial interview I did the following: (a) read my initial field notes and wrote a “clean” version of field notes, (b) created questions and/or insights I wanted to observe for or ask the participant at follow-up interviews, and (c) reflected in my research journal. Within a week of each
initial interview I: (a) took notes while listening to the audio recording of initial interviews, (b) reviewed and organized my notes, (c) wrote questions and/or insights I wanted to observe for or ask the participant at follow-up interviews, and (d) journaled (Figure 2). In addition, the notes I wrote during this phase were more detailed, specific, and comprehensive than my field notes, which helped establish connections and/or relationships that were starting to emerge in the data. As a result, data analysis of initial interviews offered a context of behaviors to watch for during observations.

**Figure 2.** Note taking during open coding during initial data analysis
Initial data analysis then occurred after observations and was used to triangulate data. Identical to initial interviews, initial data analysis of observations occurred within one week and followed a similar format. On the same day of the observation I reviewed my field notes, wrote “clean” notes, and journaled. Within one week I listened to audio recordings of students’ informal interviews, took comprehensive notes, organized my notes, wrote additional questions/insights, and journaled. After initial data analysis of observations was completed, I compared and contrasted findings from initial interviews and observations to gain further insight and triangulate data. In addition, this analysis assisted in developing questions and creating specific protocols for preceptor and student follow-up interviews.

Lastly, initial data analysis took place after follow-up interviews were completed. Data analysis of follow-up interviews was not as exhaustive as initial interviews and observations since the purpose of the interview was to verify participants’ responses. Data analysis of follow-up interviews occurred within four days of the interview and included: (a) taking notes while listening to audio recordings of follow-up interviews, (b) comparing follow-up interview notes to initial interview notes, and (c) correlating both sets of interviews notes to observational notes. Final data analysis was then performed at the conclusion of data collection.

**Final Data Analysis**

Final data analysis involved a combination of code tracking, concept mapping, note taking, and journaling. Code tracking was a continuation of opening coding that occurred during initial data analysis. Throughout open coding I performed line-by-line
analysis by reading participants’ transcriptions while listening to the audio recording. During this, I tracked codes by highlighting the transcriptions and recording the codes in an excel sheet (Figures 3 & 4). Open coding generated 44 codes which were based on categories that appeared during initial data analysis.

Figure 3. Theme and code tracking in spreadsheet during open coding for preceptors
After open coding was completed, I conducted axial coding to reveal similarities and differences amongst the data. During this process I looked for commonalities and/or relationships between categories. Specifically, I compared codes amongst: initial and follow-up interviews of each participant, preceptors to students, and interviews to observations. Throughout axial coding, I used a combination of note taking, and journaling, and concept mapping (Figures 5 & 6).

Axial coding resulted in the creation of new categories and/or collapsing of categories into larger ones to pull together thicker meanings and understandings of the data, which generated 31 codes and 23 themes (Table 4).

Figure 4. Theme and code tracking in spreadsheet during open coding for students
Figure 5. Images of concept mapping during axial and selective coding for preceptor/student relationship.

Figure 6. Images of concept mapping during axial and selective coding for forms of engagement and mediational processing.
### Axial Themes

<table>
<thead>
<tr>
<th>Themes</th>
<th>Descriptions</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Engagement definitions</strong></td>
<td></td>
</tr>
<tr>
<td>Active learning</td>
<td>Paying attention by observing, discussing, or performing clinical skills</td>
</tr>
<tr>
<td>Mental application</td>
<td>Participants thought process during engagement, thinking/critical thinking</td>
</tr>
<tr>
<td>Physical application</td>
<td>Applying knowledge through hands-on skills/physical activity</td>
</tr>
<tr>
<td>Personal interaction</td>
<td>Interacting with others (i.e., peers, preceptors, &amp; patients)</td>
</tr>
<tr>
<td><strong>Engagement looks like</strong></td>
<td></td>
</tr>
<tr>
<td>Observations</td>
<td>Watching another individual’s behavior/actions (i.e., peers, preceptors, &amp; patients)</td>
</tr>
<tr>
<td>Hands-on skills</td>
<td>Performing a physical task with their hands, specific to athletic training</td>
</tr>
<tr>
<td>Conversations</td>
<td>Speaking to others about everyday things (e.g., movies, music, current events, etc.)</td>
</tr>
<tr>
<td>Discussion</td>
<td>A back and forth conversation that requires thought process, specific to athletic training</td>
</tr>
<tr>
<td>Dialogue</td>
<td>Providing information to others or gathering information from others (i.e., peers, preceptors, &amp; patients)</td>
</tr>
<tr>
<td><strong>Engagement as a scale/depth</strong></td>
<td></td>
</tr>
<tr>
<td>Thought process</td>
<td>The more the student has to think the deeper the engagement</td>
</tr>
<tr>
<td>Critical thinking</td>
<td>Mental application of knowledge requires more engagement</td>
</tr>
<tr>
<td>New Content</td>
<td>The learning experiences that incorporates new information/skill are more engaging</td>
</tr>
<tr>
<td>Combination of thought process and forms of engagement</td>
<td>The learning experiences that require mental &amp; physical application are more engaging</td>
</tr>
<tr>
<td><strong>Role of engagement</strong></td>
<td></td>
</tr>
<tr>
<td>Application of knowledge</td>
<td>Mental and physical application of knowledge</td>
</tr>
<tr>
<td>Real people</td>
<td>The individuals students were applying their knowledge too</td>
</tr>
<tr>
<td>Authentic situations</td>
<td>Real-life experiences that occurred in clinical education</td>
</tr>
<tr>
<td>Social skills</td>
<td>Communication skills, active listening, conflict resolution, working with others</td>
</tr>
<tr>
<td>Professional development</td>
<td>Identifying and understanding expectations of profession</td>
</tr>
<tr>
<td>Unpredictable environment</td>
<td>Being unaware of what to expect (e.g., loud noises, changes to work schedule, patient’s response to injury, etc.)</td>
</tr>
<tr>
<td><strong>Preceptor/student relationship</strong></td>
<td></td>
</tr>
<tr>
<td>Comfort/good/positive</td>
<td>Student and preceptor feel comfortable and have a good working relationship</td>
</tr>
<tr>
<td>Trust</td>
<td>Student has demonstrated competence</td>
</tr>
<tr>
<td>Initiative</td>
<td>Willingness to do something without being asked</td>
</tr>
<tr>
<td>Supervised autonomy</td>
<td>Students ability to do things on their own without being directly observed; trust is established</td>
</tr>
</tbody>
</table>
Lastly, I used selective coding to “generate propositions or statements that interrelate the categories in the coding paradigm” (Creswell, 2013, p. 196). Thus, selective coding allowed me to examine the data from a holistic standpoint by pulling together large themes that provide more depth and breadth to better describe and understand “what is going on here?” in the current study. Selective coding resulted in a total of 15 codes, five main themes, and 10 sub-themes.

**Trustworthiness**

Qualitative data is highly subjective since it is primarily based on personal experiences, meanings, and feelings. Thus, interpreting qualitative data can be quite challenging since multiple interpretations can be inferred during data analysis. As a qualitative researcher, I implemented several strategies to ensure the trustworthiness of the current study.

First, I ensured the accuracy of the data by asking participants questions to verify their responses during interviews. When conducting interviews, I restated participants’ responses and asked additional questions to confirm that I was interpreting their response correctly. I also used follow-up interviews as a second opportunity to authenticate participants’ responses.

Second, I used triangulation to establish trustworthiness of the data. Triangulation is defined as, “A method used by qualitative researchers to check and establish validity in their studies by analyzing a research question from multiple perspectives is to arrive at consistency across data sources or approaches” (as cited in Williams, 2015, p. 103). This means by comparing and contrasting data from different
perspectives, qualitative researchers can reveal consistencies and inconsistencies in the data. In addition, Patton (2002) contended that inconsistencies should not be interpreted as weaknesses in the evidence; instead inconsistencies should be used to reveal deeper meaning in the data. Thus, consistencies and inconsistencies amongst perspectives must be used to establish trustworthiness in the data.

In addition, triangulation is used to corroborate evidence by comparing and contrasting information from different methods of data collection. During this process the researcher examines data from two or more sources of data collection (e.g., interviews, observations, artifacts, etc.) in order to shed light on themes that are present in both forms of data (Creswell, 2013). Therefore, I used data from interviews and observations to perform triangulation and establish trustworthiness for this study.

Triangulation of data occurred in several ways. First, I triangulated data by collecting data from preceptors and students. Gathering data from different perspectives allowed me to compare and contrast findings to disclose consistencies and inconsistencies amongst the role(s) of engagement in clinical education. In addition, if inconsistencies were exposed I used this as an opportunity to conduct further analysis of the data. Second, I triangulated data by using two forms of data collection: interviews and observations. Collecting two forms of data allowed me to see if the same types of experiences were reported in both areas of data collection. For example, during initial interviews a student stated they felt engaged when their preceptor asks them questions because it stimulates critical thinking, which I was able to witness when observing the student during clinical education experiences. Thus, I was able to confirm that
engagement in clinical education was occurring based on two different forms of data collection. Finally, I triangulated data by comparing themes that emerged during data analysis to the field notes and the entries in my research journal. By cross checking themes through multiple modes of data collection I revealed themes that were present in various locations, thus strengthening the trustworthiness of the current study.

Lastly, I kept a research journal to document and reflect on my feelings, emotions, reactions, and opinions throughout the entire study. My research journal was not considered a form of data collection; however, it assisted in data analysis and was used to establish trustworthiness. In addition, the research journal helped disclose and unveil my personal bias. Since I am currently associated with KSU’s ATP, it is evident that I naturally had some bias related to the case I was examining. Therefore, I used a research journal to record any sentiments, responses, and interpretations associated with my experiences and interactions prior to data collection, during data collection, and throughout data analysis. This information was used to encourage reflexivity and subjectivity when constructing meaning from the data. Writing about my personal experiences brought my concerns and opinions to the surface so I was cognizant of my bias. In addition, I shared my research journal on a weekly basis with a colleague who acted as a peer debriefer. When the peer debriefer or myself needed to discuss my journal reflections, we engaged in conversations where my peer brought forth questions that challenged my viewpoint and interpretations of the data. In addition, having a peer debriefer question my personal bias exposed me to possible alternative interpretations of the data.
Ethics

The current study received Institution Review Board (IRB) approval through KSU prior to implementation. In addition, informed consent was established from all participants before data collection began. Informed consent included the proper format and guidelines set forth by KSU’s IRB. Informed consent also contained the following information: purpose and explanation of study, inherent benefits and risks of the study, clearly disclosed that participation was voluntary, and informed participants they could withdraw from the study at any point in time. In addition, some participants were students I was currently teaching in my classes. Thus, the informed consent visibly stated that no negative implications would result if students choose not to participate in the study.

I also established a trusting relationship with participants to make sure they felt their rights were protected. In particular, when engaging with participants for the first time, I fully disclosed the purpose and reasoning for the study so participants were completely aware of my intentions. I also reassured participants that anything discussed during interviews or witnessed during observations would be kept confidential and not shared with other preceptors, students, or faculty. By personally expressing this to participants, I developed a relationship that established trust and encouraged open communication. In addition, establishing trust with participants created a safe environment where participants could openly express their feelings and emotions. A safe environment is crucial in qualitative research so participants feel at ease when discussing personal experiences, which provides rich, thick descriptions of their lived experiences.
Having a safe environment is especially important when interviewing student participants. Since I am a faculty member within KSU’s ATP, I was concerned that students might not be entirely forthright and transparent in their responses. To address this, during interviews I expressed that I wanted them to be completely honest when answering questions. In addition, I reiterated that their responses would be shared with others or personally held against them. I also informed all participants that pseudonyms would be used when reporting any findings from the study, which ensured their anonymity.

Furthermore, I drew on accounts of reflexivity and subjectivity from my research journal when developing relationships with participants. Schram (2006) stated, “Your dual responsibility as a researcher is to engage with others (walk together) while remaining faithful to the primary aim of conducting research” (p. 138). Therefore, the research journal was used to provide guidance on how much of myself to disclose to participants to gather the most authentic data for my line of inquiry.

Lastly, I considered how I would disengage from the research site. This was not physically challenging since I am currently a faculty member in KSU’s ATP. However, I felt it was necessary to address certain issues so participants had a sense of closure since I was still present after the study was completed. At final interviews, I informed participants that I appreciated their participation in the study. I also let participants know that there is a possibility for future research and asked if they would consider participating if/when the opportunity occurs. Furthermore, I told participants that I personally would not hold any information they disclosed against them as we continue
our professional relationship in the future. By making these statements, I hope participants felt comfortable with their involvement in the study. In addition, I believe mentioning these aspects were vital because I would be interacting with participants on a regular basis after the study was completed.

**Summary of Methods**

The current study is a qualitative case study. The context and participants of the study were students and precpetors in KSU’s ATP. Data collection occurred over the Fall 2017 academic semester and included semi-structured interviews and observations of clinical education experiences. Data analysis was conducted using the grounded theory approach (Strauss & Corbin, 1990). Trustworthiness was established through verification of responses, triangulation, and my research journal. Although, the study is limited to one case, the strong methodology produced findings to explore the role of engagement in clinical education.
CHAPTER IV

FINDINGS

The purpose of the current study was to explore the role of engagement in athletic training clinical education at Kent State University (KSU). Students’ and preceptors’ perspectives were used to examine engagement and answer the following research questions:

1. To what extent are students engaged in their clinical experiences, and if engaged, how do they describe that engagement?
2. What role(s) does engagement have in athletic training clinical education at KSU?

Data collection and analysis of 28 semi-structured interviews and 16 observations of participants’ clinical education experiences resulted in five major themes. Major themes included: (1) engagement defined, (2) depth of engagement, (3) forms of engagement, (4) the preceptor/student relationship, and (5) the role of engagement in clinical education. Themes 1–3 addressed my first research question by describing engagement. In particular, Themes 1 and 2 define what engagement is, whereas the third theme describes what engagement in clinical education looks like. Theme 4 further informs my first research question by identifying how the preceptor/student relationship influences the extent of which engagement occurs. Lastly, the fifth theme aligns with my second research question by explaining the roles engagement has in clinical education.
Engagement Defined

Participants defined engagement in clinical education in multiple ways. Specifically, active learning and application of knowledge were recognized as main components of engagement. In addition, students’ and preceptors’ portrayals of engagement aligned and were depicted the same way.

Active Learning

Participants defined engagement in clinical education as an experience where active learning occurs in the clinical setting. Students and preceptors described active learning as participating, watching, performing skills, and communicating. In particular, the majority of participants expressed active learning as being involved. Stanley, a senior in the athletic training program (ATP), provided a depiction of engagement in clinical education:

Just being there isn’t enough to be engaged and learn because, if you’re just there, you’re going be there doing nothing or doing the bare minimum. You’re not putting yourself out there, you’re not taking risks, you’re not practicing your craft. So, if I just came in here and I did nothing, I wouldn’t be learning anything. I could come here, do nothing, suck up to my preceptor, get the evaluation grades I want, but then when I go out into the profession and when I finally get a job, I’m not going [to] have the experience that I need to give my patients the best care. Stanley’s description of engagement emphasizes the significance of an active learning environment by explaining how being physically present is not enough to facilitate learning. Kascie, a junior student at a rehabilitation clinic, also referenced participation
and active learning by stating, “If you’re not going to be active in learning you’re not going to be doing much in clinicals.” These portrayals of engagement signified how being involved encompasses more than just being physically present. Engagement required students to actively contribute during clinical education experiences in order to learn and advance their clinical skills.

Participants further explained active learning as observing, paying attention, communicating, and showing interest. Corey, a junior student at a high school, defined active learning as, “asking questions, watching how certain things are done . . . and paying attention to your preceptors.” Similarly, James, a preceptor with over five years of experience in collegiate athletics, provided an illustration of active learning:

Asking questions and being attentive. You can tell when someone is engaged when they are observing what you’re doing and they are curious about what you’re doing. That’s when you know if someone is really paying attention and they are wanting to learn what you’re doing and things like that. Just asking questions is really what engagement is.

Corey’s and James’s accounts of engagement revealed the importance of being observant and conscientious during clinical education experiences. Furthermore, Evan, a preceptor at a rehabilitation clinic, explained how paying attention and showing interest can occur outside of clinical education experiences:

It [showing interest] can also go beyond the clinic. If the student sees something that they are super excited about or don’t really understand. Going home, doing a little bit of research, coming in the next day and saying, “Hey, I saw some
technique. Let’s look this up, let’s see what other people do, and let’s see what other clinics do.”

This example of active learning indicated how engagement can transcend the clinical environment, thus demonstrating how active learning can occur within and outside students’ clinical education experiences.

**Application of Knowledge**

Portrayals of engagement also included application of knowledge. Corey explained the connection between engagement and application as, “it [application] is the whole point of athletic training. Applying everything you learned, and when you apply something you are engaging in some type of activity.” In addition, students defined application as mental and physical. Charlene, a junior student, identified application as, “it [application] can be either way, performing it [physical] or mentally performing something in your brain.” Preceptors also agreed that application of knowledge incorporated mental and physical components. James explained the difference between mental and physical application when recounting his personal experiences as a preceptor:

If you’re doing a taping activity, then yes, there has to be some kind of physical involvement or some kind of task that has to be done. But if you are talking about an injury evaluation where they [student] want to learn about history or something like that, there doesn’t always have to be some kind of physical skill involved.

Furthermore, participants acknowledged mental application as critical thinking and physical application as performing a hands-on skill. Additionally, students specified that critical thinking is required to perform a hands-on skill. Charlene’s explanation of
application supported this when she shared, “I just think you have to critically think about things before you can actually apply them [hands-on skill] to a real-life situation.” Corey also alluded to critical thinking when describing observations of his preceptor at the high school:

Say I’m observing my preceptor doing an evaluation on a patient, that could be engaging more mentally cause it’s changing how I look at something, which would potentially change how I apply it, which would potentially change the outcome of a situation that I do it in.

These responses illustrate application of knowledge as two components: physical and mental. In addition, it emphasizes how physical application encompasses mental application (Figure 7), thus revealing the need to critically think when performing a hands-on skill. However, participants delineated that both types of application are not required for engagement in clinical education to occur.

Figure 7. Participants’ depiction of application of knowledge
Depth of Engagement

To gather a richer, thicker description of engagement, I had students rate their level of engagement for actions and behaviors witnessed during observations. Actions and behaviors encompassed a wide variety of tasks such as: completing an evaluation on a patient, speaking to their preceptor about creating a rehabilitation program, applying electrical stimulation, performing manual therapy, assisting their patient with exercises, or making ice bags. On average, each student rated 10–20 actions and/or behaviors, which resulted in classification of over 120 tasks, thus demonstrating a comprehensive examination of action and behaviors witnessed during observations of clinical education experiences. In addition, students’ depictions on the depth engagement included references to observations, hands-on skills, discussion, and purposeful dialogue. These tasks were identified as forms of engagement, which is discussed in the next theme.

Classification of Behaviors, Actions, and Tasks

The majority (70%) of tasks were classified as “contributing” or “engaged.” However, some behaviors were rated as “not contributing” (Table 5). Stanley identified applying intermittent compression as not contributing because, “I already know what I am doing.” Similarly, Charlene categorized ankle taping as:

Not contributing, because I just know how to do it . . . I learned it two years ago and I just know how to do it now, so it’s just second nature to me. I don’t really have to think about it too much.

These illustrations reveal how not contributing tasks do not require critical thinking because the student already understands how to perform the skill. However, critical
Table 5

Classification of Tasks

<table>
<thead>
<tr>
<th>Classification</th>
<th>Thought Process</th>
<th>Examples</th>
</tr>
</thead>
</table>
| Not Contributing | Tasks that do not require critical thinking           | • Taping a patient’s ankle  
                              • Applying a knee compression wrap  
                              • Administering intermittent compression to a patient  
                              • Recording of treatment (e.g., ice bags, hot pack, etc.) |
| Contributing    | Tasks that require basic cognitive processing         | • Setting up parameters for rehabilitation equipment  
                              • Performing a hip spica wrap on a patient’s groin  
                              • Watching a patient perform exercises and provide feedback  
                              • Assisting a patient with their exercises (e.g., holding a resistance band, throwing a ball, etc.) |
| Engaged         | Tasks that require complex cognitive processing       | • Receiving feedback from a preceptor on their performance  
                              • Discussing the potential diagnosis of a patient  
                              • Performing an evaluation on a patient  
                              • Applying manual traction to a patient’s neck  
                              • Reading a physician’s note about a patient |

thinking was present when the student initially learned these tasks, yet it is no longer required because the task does not involve new knowledge or application to a new situation.

Interestingly, there were occasions when students expressed they would not use the scale to rate a particular action or behavior. For example, cleaning tables, filling water bottles, applying ice bags, and participating in everyday conversations were classified as tasks not related to engagement in clinical education. Students stated they would not use the scale because “anybody can do that,” “I’ve done that too many times,” and “it has nothing to do with athletic training.” These interpretations also aligned with
participants’ initial descriptions of engagement, which identified engagement in clinical education as a learning experience that involves athletic training skills, knowledge, and acquisition. Therefore, it can be determined that students considered engagement in clinical education to involve tasks that are athletic training specific.

**Contributing.** Tasks classified as contributing included hands-on skills and observations (Table 5). Alison provided a depiction of contributing:

> Probably, honestly, just setting up equipment, like the treadmill or the elliptical . . . because I have to go and set up the program, so they [patient] can do their exercises, but after you’ve done it a hundred times . . . it’s muscle memory now.

Alison’s use of the term “muscle memory” demonstrates how contributing tasks require basic cognitive processing. Students also classified types of hands-on skills as contributing. Likewise, Charlene identified wrapping a patient’s groin as contributing:

> I mean I know how to do it, but it’s like, I kind of had to think about what ways I have to pull and what ways I should be assisting him [patient] and which ways I should be resisting, so I kind of had to think about it a little bit more.

These portrayals described contributing hands-on skills as tasks the student has already learned and knows how to perform, thus signifying the use of basic cognitive processing since the student has to remember, understand, and apply their knowledge to properly perform the hands-on skill. Figure 8 provides a visualization of cognitive processing by identifying the components of Bloom’s taxonomy that comprise basic cognitive processing. Complex cognitive processing is explained later when describing engaged tasks.
Students provided similar explanations when classifying observations. Stanley categorized watching his patients perform rehabilitation exercises as, “contributing, because if they’re doing something wrong, I would correct them and tell them why, or tell them, ‘You need to start working this muscle. You’re working this one instead.’” Corey’s account of observations matches Stanley’s perspective when identifying watching a patient doing ankle exercises as contributing because, “I’m not actually doing anything except watching them [patient].” In addition, students also categorized observations of preceptors as contributing. Students further expressed that during
observations they learn by paying attention to the behaviors of others, which suggests the use of basic cognitive processing.

**Engaged.** Tasks classified as engaged included purposeful dialogue, discussions, and hands-on skills (Table 5). Corey categorized answering patients’ questions as engaged because, “You are teaching and educating the patient by explaining things to them.” Similarly, Stanley identified the explanations he provides to his patients as engaged because, “I’m informing the patient about why I am doing what I am doing.” Stanley expanded by stating, “I also see me asking my patients questions as engaged because I hear their [patient] response and then start discussing their treatment and explain where I see them going.” In addition, the types of conversations students classified as engaged represented purposeful dialogue (i.e., explanations, feedback, and rhetorical questioning), which is further described in the next theme.

All of the discussions that were observed during clinical education experiences were also classified as engaged. Charlene provided a description of this when reflecting on a conversation she had with her preceptor about manual muscle testing:

That was definitely engaged, because I know that some people learn them [manual muscle testing] differently than we might learn them. I like to get different opinions . . . and I want to make sure that I’m doing them right so the test is effective.

Charlene continued to elaborate on engagement by identifying another discussion she had with her preceptor about therapeutic modalities:
That was definitely engaged, because she [preceptor] hasn’t used modalities in a while so I was kind of refreshing her. Then she would ask me questions and I would answer the questions, which made me think about it a little more than just applying the modality to a patient. I had to explain why we do it.

Charlene’s explanations of discussions include decision-making, gathering knowledge, evaluating information, justification, and reasoning, which are components of critical thinking. Characteristics of critical thinking and decision-making were also included in other students’ classification and depictions of discussions.

Certain hands-on skills were also classified as engaged. However, these hands-on skills were different than those identified as contributing. Engaged hands-on skills were tasks that required critical thinking and decision-making. Charlene explained why she classified performing an evaluation on her patient as engaged because:

I had never seen an injury like that . . . The signs and symptoms of where his [patient] pain was and where the swelling occurred was weird. It made me think of other structures that could be around the general area that could be damaged or injured . . . I really had to think about what the diagnosis could be . . . I was thinking about the evaluation for the entire second half of the soccer game.

Charlene continued to elaborate on the experience by expressing how the evaluation led to a discussion with her preceptor, because they also found the evaluation perplexing.

Other hands-on skills that were classified as engaged included patient evaluations and application of new treatments (i.e., joint mobilizations, combination therapy, proprioceptive neuromuscular facilitation, and tapings). In addition, students described
engaged hands-on skills to include critical thinking and decision making, which are aspects of complex cognitive processing (Figure 8).

Figure 8. Differences between basic and complex cognitive processing

Students’ descriptions of engaged hands-on skills included application, justification, and reasoning. Interestingly, the same characteristics (i.e., application, justification, reasoning, and decision making) were also included in students’ depictions of purposeful dialogue and discussions, thus indicating complex cognitive processing as a component of engaged tasks.

**Distinction Between Contributing and Engaged**

When asked to explain the difference between contributing and engaged tasks, students described the main difference as their thought process. Alison stated:
I think contributing would be just kind of helping out, like doing little itty-bitty things. Engaged is where I’m taking that next step and I’m going to actually learn something. I’m learning and critically thinking . . . To be all the way engaged is me actually needing to do something to put my critical thinking into play.

Charlene provided a similar illustration:

I think something that’s contributing as I still have to think about it, but I already know what I’m kind of doing. So, it’s kind of second-nature to me. And when I’m engaged it’s like I’m learning new things and trying to apply what I learned to a real-life situation.

Other students explained their thought process during engaged tasks as “critical thinking,” “analyzing information,” and “making decisions.” In addition, Charlene’s and Alison’s portrayals included accounts of learning new information. Students expressed that when clinical education experiences involved learning new information, concepts, or ideas it stimulated their thought process that made them critically think about the situation. These findings reinforce the use of complex cognitive processing during engaged tasks.

Students also identified personal interactions as a difference between contributing and engaged tasks. Kascie explained:

If I’m just watching them [patient], making sure that they’re doing the exercise correctly, then I would just say it’s contributing. But if they’re doing something wrong and I have to correct them and give them feedback, I would say that is engaged.
Corey agreed, “It was engaging once I started to assist them [patient], but I’d say it was more contributing before when I was watching them.” Other students also expressed the difference between contributing and engaged as personal interaction that includes physical application. Rita described the distinction between contributing and engaged as, “I think it’s [engagement] more of me doing the hands-on stuff with patients.” Similarly, Corey identified physical application when describing engaged tasks as:

Hands-on, but at the same time it’s if what I do changes what happens. So, if I’m observing, I’m not actually changing anything in this situation . . . When I’m engaged I’m changing what’s happening by demonstrating the right technique.

These interpretations include depictions of engaged hands-on skills because the student is physically applying their knowledge on a patient. In addition, as previously mentioned, when defining engagement, participants stated physical application encompasses mental application. Therefore, students have deeper engagement with engaged hands-on skills because they are mentally and physically applying their knowledge. However, engaged hands-on skills were not the only type of personal interaction that was classified as engaged. Students also recognized providing verbal feedback to their patients, involvement in discussions with preceptors, and participating in various types of purposeful dialogue as engaged. Thus, it can be determined that another disparity between contributing and engaged tasks was a personal interaction that is physical or verbal.

Comprehensively, students identified the primary difference between contributing and engaged tasks as their thought process. Contributing tasks were described as
involving basic cognitive processing while engaged tasks were characterized as complex cognitive processing. In addition, having a personal interaction during the learning experience was another distinction between contributing and engaged tasks. Performing engaged hands-on skills or participating in conversations where students had to apply their knowledge were also identified as engaged. Therefore, it can be determined that students see engagement in clinical education as learning experiences that involve application of knowledge and complex cognitive processing.

**Forms of Engagement**

When asked what engagement in clinical education looks like, participants described four forms of engagement: observations, hands-on skills, discussions, and purposeful dialogue. Observations were learning experiences when a student observes their preceptor or the preceptor observes the student. Hands-on skills were physical tasks that are specific to athletic training (e.g., taping an ankle, evaluating a patient, performing manual therapy). Discussions were in-depth conversations between the student and preceptor. Lastly, purposeful dialogue was recognized as types of conversations that have less depth and are relatively short.

In addition, participants’ depictions of observations, hands-on skills, discussion, and purposeful dialogue included the same attributes as their initial descriptions of engagement. Active learning, application of knowledge (mental and physical), critical thinking, decision-making, and cognitive processing were included in participants’ portrayals. These findings align with the previous two themes, thus reinforcing them as the main components of engagement in clinical education.
Observations

Observations were identified as a form of engagement where the student watches their preceptor in the clinical setting. Stanley described observations as, “Observing the preceptors to see how they are doing things and to see how they communicate with the patient.” He further elaborated on observations of his preceptor:

Yeah, I feel engaged [during observations]. I always try to keep an eye on what he’s [preceptor] doing. If he’s doing something I haven’t seen I ask him a question, like, “Oh I haven’t seen it like that. Where did you learn that?”

Similarly, Kascie discussed how observations allowed her to witness the behaviors of preceptors; “It’s me more seeing how she [preceptor] reacts and why she’s doing something over something else.” These portrayals demonstrate how observations create an active learning environment where the student visually watches his or her preceptor in order to learn from the experience. In addition, Stanley’s and Kascie’s depictions of observations integrate accounts of the cognitive processing they go through when watching their preceptor, thus, acknowledging how observations facilitate learning through mental application.

Preceptors’ descriptions of observations also included active learning and application of knowledge. James expressed the purpose of observations as, “They [students] are going see how something is treated and be able to take that with them when they are out of here and say, ‘Alright. Well, I saw James handle this situation. Oh, that’s how he did it.’” Just like students’ portrayals, James’ example includes aspects of cognitive processing and mental application, while also suggesting the influence
observations have on decision-making. The majority of preceptors also referenced the use of observations as a way for students to gain knowledge for future application.

Students also considered experiences when their preceptor is watching them to be a form of engagement. Charlene characterized these observations as, “when your preceptor is near you and they’re watching you.” She continued by explaining how students benefit from preceptors viewing their performance: “I feel better if they [preceptor] watch so they can see mistakes I make so I can be better.” Alison believes her preceptor observes her because, “He wants to make sure I’m doing it right on the patient, so I don’t either hurt the patient or I don’t do it wrong so it doesn’t help the patient.” Thus, participants considered student observations to be engaging because the preceptor is visually assessing the student’s ability during the experience, which provided opportunities for improvement.

**Hands-On Skills**

Participants defined a hands-on skill as performing a physical task. Rita, a senior student within collegiate athletics, described hands-on skills as, “doing rehab, or actually doing the electrical stimulation yourself, or doing the ultrasound, or doing the tapings for the athlete.” Her depiction of “doing” demonstrates the incorporation of a physical task. James reinforced the need for physical involvement by defining a hands-on skill as, “If you are doing a taping activity, then yes, there has to be some kind of physical involvement or some kind of task that has to be done.” In addition, during observations, I witnessed students performing various hands-on skills such as: tapings, patient
evaluations, application of braces, administration of modalities, stretching, and wrappings.

A hands-on skill was also described to be a physical task within the scope of athletic training. Charlene exemplified this by explaining the difference between filling up a water bottle to performing an evaluation as, “I think everybody kind of knows how to fill up a water bottle, but evaluations are different. There’s different approaches, different special tests, and different things that you can do and still get the same end result.” Jasmine echoed this when she expressed how folding towels is not engaging, “because it’s like a mindless task. That has nothing to do with rehabilitation or specifically doing a skill.” Charlene’s and Jasmine’s explanations reveal the distinction between physical tasks that do not require a specialized skill set and those that are athletic training specific.

Lastly, participants’ portrayals of hands-on skills incorporated aspects of active learning and application of knowledge. Evan conveyed this when describing a hands-on skill as, “It’s the physical part that makes them [student] engaged . . . they can apply what they’ve learned. They get that practical application.” James reiterated the need for application of knowledge by referencing critical thinking when describing hands-on skills:

They [student] still have to do it [hands-on skill] themselves. I can show them skills till I’m blue in the face, but they have to apply it themselves and figure it out for themselves . . . They have to use some critical thinking to do it their own way.
Similarly, Stanley expressed:

I prefer hands-on skills, if possible. So, when I’m stretching a patient I try to make a judgment on my own of how far to push based on their muscle tension. I try to decide how far I think the patient can go. And then, if I’m not sure . . . I ask the patient, “Is this good?”

Stanley’s account references the use of mental application by determining how far to stretch the patient, which aligns with other participants’ depictions of hands-on skills. Thus, it is apparent that preceptors and students consider hands-on skills to be engaging, because they create an active learning environment that integrates application of knowledge and cognitive processing.

**Discussions**

All participants identified discussions as a form of engagement. When describing discussions, the main characteristic was asking questions. Kascie explained discussions in her clinical education experiences as:

Just asking questions. I mean, because there’s a lot of stuff that we do, that I’m like “Why? Why do you do that?” Over something else, because there’s a lot of stuff that I saw at track or baseball that we don’t do at the clinic, and I’m like “Well this is what we did, why aren’t you doing that?”

Jackson also distinguished asking questions as a key component of discussions by stating, “There needs to be a question, and then there needs to be a way to figure out the question, or an answer to the question, and then there needs to be a process to go about finding
that.” These illustrations establish how asking questions is used to facilitate an active learning environment through discussions between the preceptor and student.

Discussions were also described to be collaborative where two or more people equally contribute to the conversation. For example, Jasmine shared, “Exchanging ideas with a person, so it’s not so much my preceptor telling me what he thinks, but us conversing back and forth and me giving my opinion, and him giving his opinion.” In addition, Stanley expressed how he and his preceptor were able to openly exchange ideas:

It’s [discussion] collaborative, because if I did something different . . . he [preceptor] says, “Oh, I didn’t think of that,” or “I didn’t see that.” So, I think he sees and can learn a little bit from me, too. It’s learning from both sides, which I think is important.

Preceptors also acknowledged discussions as an experience where both parties learn from each other. Evan explained discussions as:

An opportunity to learn one on one. Not only for the student to learn from me but also for me to learn from the student on kind of what’s changing in the classroom.

What’s different versus when I was a student to how it is now.

Based on these findings, it is evident that students and preceptors both see discussions as a collaborative learning experience.

Participants’ portrayals of discussions also included justification, reasoning, decision-making, critical thinking, and application of knowledge. Jackson expressed how he uses discussions as a way for students to justify their decision-making: “Discussion would be asking the student, ‘Well, what’s it for? Did you evaluate him [patient]?
What’d you see [diagnosis]?” Whereas, Jamie referenced critical thinking when conveying the purpose of discussions as, “I think it [discussions] shows a grasp of the subject they [student] are talking about . . . It shows that they are critically thinking about it instead of just regurgitating information.”

Similarly, students used the same terminology when recounting the discussions they had during clinical education experiences. Corey conveyed that during discussions he has to critically think because his preceptor “makes me justify. She [preceptor] asks my reasoning behind what I’m doing.” Kascie provided an example of application when explaining her thought process during a discussion with her preceptor as, “You have to gather the knowledge and figure out how to apply it and that would involve critically thinking.” These depictions all include attributes of critical thinking (i.e., application, justification, reasoning, and decision-making), which signifies cognitive processing. Therefore, it can be determined that participants see discussions as a form of engagement where students apply their knowledge through conversation.

During observations I witnessed many discussions. In particular, I observed a discussion about manual muscle testing. During this experience, Charlene asked Jamie questions about patient positioning, hand placement, and grading scales. Jamie answered the questions, but also asked Charlene additional questions such as, “Why would you position your patient supine when testing the subscapularis?” or “How might your patient compensate if that muscle is weak?” In addition, there were times when Jamie informed Charlene that her response and reasoning was right, but also offered an alternative answer, indicating how there can be more than one correct solution. Furthermore, there
was an instance when Charlene provided justification for her decision and Jamie responded by saying, “Are you sure?” They looked at each other, shrugged, and then searched Charlene’s textbook to find the answer together. When they came across the answer, Jamie looked at Charlene and said, “I guess you were right. I learned something new.” The illustration of this observation contains the characteristics participants used to describe discussions: asking questions, collaboration, justification, reasoning, critical thinking, and decision-making. In addition, during the observation, the preceptor and student both gathered and shared their knowledge to find a solution, thus indicating application of knowledge and cognitive processing as a component of discussions.

Overall, participants considered discussions to be engaging because they created an active learning environment. During discussions, active learning occurs through asking questions and collaboration between the preceptor and student. In addition, discussions involve mental application, which was described using terminology that represents critical thinking (i.e., application, justification, reasoning, and decision-making). Thus, it can be determined that participants see discussions as a form of engagement, because they create an active learning environment that integrates application of knowledge and cognitive processing.

**Purposeful Dialogue**

Participants’ depictions of engagement included other types of conversation. For the current study, these conversations are classified as purposeful dialogue. Purposeful dialogue includes conversations where one person is predominately speaking and the other is actively listening. Unlike discussion, purposeful dialogue is not collaborative.
Purposeful dialogue was described as short conversations where there is a correct answer. Jasmine defined purposeful dialogue as, “They [preceptor and student] may be equally talking, but one person is definitely providing all the answers and the educational components to inform the other.” Corey explained purposeful dialogue by comparing it to discussions:

There is a definitive answer to it [purposeful dialogue] where there’s not much of gray area, where in discussion we [preceptor and student] could be having a back and forth discussion on the cervical spine immobilization about using the log roll versus the lift and slide technique.

Furthermore, Stanley included active listening as a main component of purposeful dialogue:

I would say there is active listening. So, it’s not “Listen to what my preceptor tells me,” and I let it go out the other ear. But I actually listen to what he’s [preceptor] saying, and then I analyze or critically think about what he said, and think about how I can apply it to future situations I may be involved in.

Types of purposeful dialogue were identified as explanations, feedback, and rhetorical questioning. Explanations were described as conversations where a person gains knowledge from another individual. Alison recalled a time when her preceptor explained how to develop a rehabilitation program as purposeful dialogue:

So, when I first got there [rehabilitation clinic] this semester, I didn’t really know much about programming, so we [preceptor and student] talked a lot about
When to put certain exercises first, and where your easier exercises should go. I didn’t know why and then he [preceptor] explained why.

James expressed purposeful dialogue as, “Let’s say there is a physical task that needs to be done and I’ll ask them [student] if they know how to do it. If they don’t, I will verbally explain how to do it.” Explanations were also identified when students described the interactions they had with patients. Corey described why he feels engaged when providing explanations:

If a patient has a question about an injury, I feel engaged when I’m telling them about the injuries and educating them on something they might not know about so they have a better understanding on what’s going on with them.

Explanations were also witnessed during observations. When observing James, I saw him provide information to his students about recent events. He explained to his students why a patient had gone to the emergency room the previous night. In addition, James informed the students about updates to the new electronic documentation system by clarifying the proper way to record and code treatments. I also watched Jasmine explain the pathophysiology of medial tibial stress syndrome when a patient asked her about their diagnosis.

Feedback was another type of purposeful dialogue found to be engaging. When receiving feedback, students expressed their preceptors recognize areas upon which they needed to improve. Stanley described feedback as, “Taking his [preceptor’s] criticism, but not taking it to heart, and being able to configure my way of doing things around what he said to determine what will work for me.” Jasmine further revealed why
feedback is engaging as, “They [preceptors] have written down certain things for me to improve on. I consider that engaged because they have seen my weaknesses, and they give me tips on how to improve them.” Feedback was also present throughout observations. In particular, I watched a student receive feedback after completing a thumb taping. During the observation, Jamie acknowledged areas of improvement by informing the student that they needed to pull tighter when applying the tape to prevent the thumb from going into extension. She then explained the negative outcomes that could occur if the taping was not applied correctly.

The last type of purposeful dialogue was only mentioned by preceptors. Preceptors identified rhetorical questioning as a form of engagement. Rhetorical questioning was described as a learning experience where the student asks the preceptor a question and instead of answering the question, the preceptor responds by questioning the student. I witnessed rhetorical questioning many times during clinical education experiences. In particular, when observing Rachael, the student asked her how many sets and repetitions she wanted the patient to perform. Rachael responded by saying, “I don’t know. How, many do YOU want the patient to do?” The student then paused, thought about it for a while, and provided an answer. Rachael replied by agreeing with the student’s decision and offering encouragement by saying, “Good job!” When I asked Rachael about this instance during follow-up interviews, she expressed she uses rhetorical questioning to, “trigger critical thinking.” Similarly, another preceptor explained why he considered rhetorical questions to be a form of engagement, “Yeah, rhetorical questions would be a big one [form of engagement] . . . I don’t necessarily
need her [student] to provide feedback, but I need her to think about why she’s doing what she’s doing.” Thus, it is evident that preceptors use rhetorical questions as a way to stimulate critical thinking and foster decision-making skills with students.

Just like discussions, purposeful dialogue was considered a form of engagement because it involves active learning, critical thinking, and application of knowledge. During purposeful dialogue, active learning occurs through explanations, feedback, and rhetorical questioning. In addition, the premise of purposeful dialogue is to provide information so the other party can gain knowledge to understand a concept or idea. Furthermore, participants’ depictions of purposeful dialogue also incorporated aspects of critical thinking (i.e., justification, reasoning, decision-making, and application). Therefore, purposeful dialogue is a form of engagement because it creates an active learning environment, involves application of knowledge, and requires cognitive processing.

**Multiple Forms of Engagement**

Participants declared that only one form has to be present for engagement in clinical education to occur. However, if the learning experience included more than one form, it was considered deeper engagement. James provided a portrayal of this when explaining the importance of incorporating discussions with observations as, “

You can still observe things and learn something, but you’re not going to get the whole picture . . . If you do not understand how someone is doing something, you’re not going to fully learn how to do it.
Similarly, Rita stated, “I feel I’m most engaged when I am doing all that stuff [observations, hands-on skills, and discussion].” In addition, when reflecting on a learning experience that incorporated all forms of engagement, Kascie termed it as, “crazy engagement.” Kascie’s expression of “crazy engagement” illustrates the significance of including multiple forms of engagement during clinical education experiences.

Other students also acknowledged engagement as an integration of observations, hands-on skills, discussion, and purposeful dialogue into a single experience. Alison described engagement as, “I would be asking questions while they [preceptor] demonstrated the skill on me or I would be demonstrating the skill while they are telling me how to do it. That’s what I think engagement is.” Corey also included various forms of engagement when describing how to administer ultrasound: “If I didn’t know how to do an ultrasound I would watch it get done a few times as the preceptor explained it to me. Then after that, I would actually perform the ultrasound.” Thus, it is evident that the depth of engagement increases when more than one form of engagement is present during a learning experience. Interestingly, preceptors also included multiple forms of engagement when describing their teaching methods.

During initial interviews, preceptors were asked how they would teach a student to perform an evaluation, tape an ankle, or administer a modality. Every preceptor included observations, hands-on skills, discussion, and purposeful dialogue in their descriptions. Dean explained how he would instruct a student to tape an ankle:
I would go step by step and perform the ankle taping on the student. You know, covering all my bases and making sure I answer all the questions that they [student] should be asking . . . Once it’s complete, I would have them walk around get a feel for the taping. I would then have the student perform the taping on me . . . Then after that, we would go over the taping. I would ask them what they thought, what they think they needed to do better, what they thought they did good.

Hannah also integrated multiple forms of engagement when describing how she teaches a student to perform an evaluation:

I would first go through and show them [student] this is the way I evaluate patients. This is the way I was taught to evaluate patients. Then when the next patient comes in I say, “Okay, go ahead. It’s your turn” and let the student perform the evaluation . . . Then following the evaluation, we have a discussion about what he [student] could do better or what he could have changed.

Dean’s and Hannah’s portrayals reinforce the use of more than one form of engagement. In addition, since preceptors’ and students’ depictions both integrated multiple forms of engagement into a single learning experience, it can be concluded that engagement in clinical education occurs through observations, hands-on skills, discussions, and purposeful dialogue.

**The Preceptor/Student Relationship**

To better understand the role of engagement, participants were asked to identify factors that promote or hinder engagement in clinical education. Factors included
personal, behavioral, or environmental aspects that influenced engagement. Personal factors were beliefs or characteristics that are specific to the individual (e.g., race, gender, religion, faith, personality, etc.). Behavioral factors were any actions or behaviors of an individual (e.g., initiative, communication, empathy, etc.). Environmental factors were attributes or conditions of the clinical education setting (e.g., athletic training facility, football field, number of patients, loud music, etc.). Data analysis of various factors revealed a correlation to the preceptor/student relationship. In addition, at follow-up interviews, participants were asked to identify one factor that promotes and/or hinders engagement in clinical education the most. All participants acknowledged the preceptor/student relationship as the most influential factor. Specifically, feeling comfortable and having trust were recognized to have the greatest impact on engagement in clinical education.

**Feeling Comfortable**

Participants described a preceptor/student relationship that promotes engagement as “comfortable,” “good,” “positive,” and “enjoyable.” However, the majority of participants defined the preceptor/student relationship as comfortable. Therefore, for the current study, comfortable/feeling comfortable is used to characterize a preceptor/student relationship that promotes engagement.

When describing the preceptor/student relationship, participants discussed how feeling comfortable is attained. Stanley stated conversations with his preceptor allowed him to become comfortable because it “shows them [preceptor] who you are and what you can do.” Other students also identified conversations as the primary means of
developing a comfortable relationship with their preceptor. Students further expressed the conversations they had with preceptors were not limited to athletic training. In fact, students explained how talking about various aspects of their life allowed them to feel comfortable. For example, Rita declared:

> Even engaging in personal life stuff and talking about things that brings you and your preceptor closer together. I feel like that also helps... I feel it’s important because you are at clinicals a lot and you need someone there to help you through all the external stressors. Not just from the program but, from everything else... I feel the more you know about the person the better connection you have, which will allow you to have a better experience because you know how the both of you work together.

Jasmine’s perspective of feeling comfortable aligned with Rita’s when recalling conversations she had with her preceptor:

> I felt that we [preceptor and student] didn’t always have to talk about athletic training stuff. We could talk more about our social life and our lives outside of athletic training, which helped our relationship in being more comfortable with each other.

These depictions demonstrate how feeling comfortable allows the preceptor and student to better understand each other so they can form a strong working relationship, which was also identified by preceptors.
Preceptors described having conversations about their personal lives as a way to establish comfort and develop a positive working relationship with their student. Evan explained why it’s important for him to get to know his students:

It helps you relate to them [student] a little bit better. For me, it helps me to give them tasks they might be better at than others. If they are a little shy when you first meet them, you might not have them interact with a patient one-on-one right away. But if they’re verbal and outspoken, and are more of a people person, you say “Hey, this is so and so, why don’t you go up to them, say hi, and introduce yourself.”

Thus, Evan uses personal conversations to better understand his students so he can provide them with appropriate learning experiences. Dean, another preceptor, conveyed why he initiates conversation about everyday life with his students:

If you are there and people are not talking to you, you are not going to feel comfortable opening up yourself. So, I think that if the people around you make you feel wanted, it’ll be a lot easier for you to open up and engage.

Thus, Dean uses ordinary conversations to make his students feel comfortable so they are more willing to engage during clinical education experiences. Other preceptors also expressed the desire to get to know their students through conversation so both parties are comfortable with one other.

Positive Influences of Feeling Comfortable

A comfortable preceptor/student relationship was found to increase initiative. Participants stated that feeling comfortable allowed the individual to become associated
with the other person, which makes them more inclined to initiate. Kascie provided a
depiction of the influence comfort had on her willingness to engage during clinical
education experiences. “If I feel comfortable, I’m going to get more out of the
experience and I’m going be more willing to take control of situations . . . I will learn
more and be more engaged.” She elaborated by stating, “If I’m comfortable I’m going to
do more, whereas, if I’m not comfortable, I’m not.” Corey also explained how feeling
comfortable increases his initiative:

So, I guess it’s one of those things where it’s always better when you are working
as a good team [preceptor and student] . . . It’s like, “Oh, I definitely want to help
you more, because you want to help yourself” and that motivates me.

Corey’s illustration also demonstrates how feeling comfortable increases initiative from
both parties, the preceptor and the student. This theme was also present in the
preceptors’ explanations of feeling comfortable. Hannah described:

If you have a good relationship with your student they want to perform better for
you . . . they want to learn more. If the relationship is kind of rocky, it could get
to a point where the student will resent you and not care to learn or hear what you
have to say. So, I think that is a big part of engagement . . . If I have somebody
that’s interested in learning and wants to learn, I want to teach more.

Hannah’s depiction of comfort and initiative displays how the preceptor/student
relationship directly influences engagement. In particular, these findings highlight how
feeling comfortable increases opportunities for learning. Figure 9 provides a
visualization of the influence comfort has on initiative. The figure demonstrates how
once a comfortable preceptor/student has been established, an opportunity is provided by
initiation of either the preceptor or student. The image then shows how once started,
initiation and learning opportunities continues to occur as long as both parties contribute,
which increases engagement.

![Diagram showing the relationship between Comfort, Opportunity, Initiative, and Engagement.]

*Figure 9. The influence a comfortable preceptor/student relationship has on initiative,
learning opportunities, and engagement.*

Furthermore, during each opportunity, the student participates in various forms of
engagement (i.e., observations, hands-on skills, discussion, and purposeful dialogue).
The preceptor uses these opportunities to assess student’s knowledge, skill, and
acquisition to determine competence. When competence is achieved, the
preceptor/student relationship transcends to include trust, which was identified as the
other salient factor that influences engagement in clinical education.
Trust

Participants acknowledged trust as a key factor that promotes engagement in clinical education. Preceptors stated trust is established when a student demonstrates competence. Yet, the student must first go through the processing of attaining competence before their preceptor trusts them.

**Competence.** Preceptors explained the use of observations, hands-on skills, discussion, and purposeful dialogue as methods to assess students’ competence. Throughout observations, I continuously witnessed the forms of engagement being used to evaluate competence. For example, James, a preceptor, watched his student from a distance while they evaluated a patient’s ankle. Once the student completed the evaluation, James and the student engaged in a discussion about the diagnosis. After the discussion, James performed his own evaluation on the patient. During the follow-up interview, I asked James about his behaviors during this experience. James explained:

I was just getting validity by going in there and doing my own little evaluation to make sure that he [student] was doing the right things . . . I was assessing the patient to give the student feedback. If I walked over there and did my evaluation and saw that he was nowhere near the correct diagnosis then I would have said, “Okay well, this is what you did wrong. This is where he’s having pain. This is what I think it is. This is why I think it is.” That’s why I observe those kinds of things to make sure that I can either give him positive feedback, negative feedback, or whatever kind of feedback I think is beneficial for the student. James continued by explaining how he determines when a student is competent:
After a couple evaluations, they [student] are correct and I’m comfortable with
the way that they have evaluated the patient and if they have done it thoroughly
and I feel like they are confident in what they are doing.

This portrayal indicates how the forms of engagement are used to assess students’
competence. It also discloses how a student has to properly demonstrate their skills and
ability more than once.

Other preceptors’ descriptions of competence also referenced the need to display
proper performance over time. Preceptors expressed competence as “when they [student]
have a full understanding,” “being able to demonstrate each step of the process
effectively, confidently, and accurately,” and “we have similar opinions in diagnoses of
different patients.” These descriptions indicated how competence takes time and does
not transpire through a single occurrence. Thus, a preceptor will continue to assess a
student until competence is achieved. Once competence is attained, trust is established.

Figure 10 provides a visualization of how trust is established through competence.
Interestingly, when asked how trust influences engagement, preceptors’ and students’
both expressed it increases opportunities for learning and deeper engagement.
Opportunities. When trust is present, the preceptor provides the student with more opportunities for learning. Hannah provided a depiction of trust and opportunities:

When I feel comfortable with him [student] doing something and he does it well, I then give him new things to do. After he shows me that he’s strong in one area I can say, “Well why don’t we go over here, and can you make up a rehab for one of the football players?” And I can feel comfortable in the fact that he is
competent . . . and the more I see that they [student] are competent in other tasks
the more I want to give them.

Other preceptors also identified trust when asked why they provided students with
opportunities by asserting “because I trust them,” “I trust that they can do it,” and “they
have earned my trust.”

Students also interpreted opportunities as trust. Stanley explained why his
preceptor allowed him to perform an evaluation on a patient as, “He gave me the
opportunity because he trusted me.” Kascie also recognized trust as the reason a
preceptor provided opportunities by stating, “She [preceptor] trusts me with a patient to
not injure them . . . she has faith in me that I can do it.” Therefore, it is evident that
students and preceptors both identify trust as a factor that promotes engagement in
clinical education because it increases opportunities for learning. However, trust not only
increased learning experiences, it also provided students with the opportunities for deeper
engagement.

Preceptors’ descriptions of learning experiences that occurred after trust was
established involved: learning new information, advancement of skills, and supervised
autonomy. Preceptors described these learning experiences as “I’ll show the student
something new,” “I’ll let them [student] go to the next step,” and “they can do it on their
own now.” However, supervised autonomy was the experience that was described and
observed the most.

Supervised autonomy is when a student works independently, but the preceptor
has the ability to intervene on behalf of the student or patient (CAATE, 2018). Evan
provided an example of supervised autonomy when explaining why he allowed his student to work with a patient on his or her own:

> Because they have [student] demonstrated competence, the physical, the mental, and the application process. If I can have that student, and they’ve had this patient for multiple visits now and they’ve taken them from start to finish, I can just watch from a distance, and they can go from the start to the middle to the end and complete the patient’s chart. Then I’ll check the chart to make sure I don’t have to fix anything.

Supervised autonomy was also witnessed during every single observation. To gain further insight, participants were asked about supervised autonomy at follow-up interviews. When asked why supervised autonomy occurred each participant identified trust. Kascie explained:

> She [preceptor] trusts me so she lets me do supervised autonomy . . . She lets me do that and she’ll tell me something about one of the patients and she trusts me to follow through with that patient and write the injury report. She also lets me do evaluations without being right there. Instead, she comes over after and says, “Oh, what’d you get?” And then we talk about the evaluation.

Similarly, Charlene interpreted supervised autonomy as trust by stating, “I think that she [preceptor] trusts me . . . because she has seen how I evaluate, what I can do, and she’s okay with me working her patients.” Thus, the presence of supervised autonomy in clinical education means the preceptor trusts their student. In addition, students’ explanations of supervised autonomy revealed opportunities for deeper engagement.
Students classified learning experiences that included supervised autonomy as engaged because they required complex cognitive processing. Rita categorized supervised autonomy as engaged when recalling a time she performed manual therapy on her patients without the assistance of her preceptor:

Because each of the girls [gymnasts] is different and you learn what kind of massages they like, or like what techniques they prefer. Like the massage that I did on the patient’s Achilles, it was sore, but I had to do a deep tissue massage. Whereas the other patients had really bad trigger points, so I had to think about what works best for that.

Rita’s depiction of supervised autonomy included descriptions of critical thinking, decision-making, and physical application. Similarly, Stanley classified an occasion when he evaluated a patient on his own as engaged because, “It was just me and the patient . . . So I’m asking the questions and putting everything I learned in classes together . . . for me that’s maximum engagement.” Stanley elaborated by explaining maximum engagement as, “critical thinking and physically doing it [evaluation] on my own.” Other students also identified physical application, critical thinking, and decision making when describing experiences that involved supervised autonomy. Thus, based on students’ explanations, it appears clinical education experiences that involve supervised autonomy require complex cognitive processing, which provide opportunities for deeper engagement.
Positive influences of trust. Trust was found to positively influence the preceptor/student relationship by increasing initiative and improving students’ confidence. Students expressed that trust increases opportunities for learning, and when their preceptor provided opportunities it increased their initiative. Stanley conveyed, “Trust makes me engage more because I know he [preceptor] trusts me to care for an injured athlete.” Corey expressed how trust influenced his behaviors as, “I am definitely more inclined to initiate because if she [preceptor] thinks I can do this . . . I can do anything and I just have to keep doing it.” Students also described initiative as “being motivated” and “wanting to do more,” thus revealing how trust increases students’ initiative.

Likewise, preceptors identified the same relationship between trust and initiative. Jamie expressed, “When they [student] recognize you trust them they are more motivated and more willing to initiate.” Other preceptors also recognized an increase in student initiative by describing initiative as “demonstrating a willingness to learn,” “doing things they [student] know need to get done,” and “asking to learn new things.” In addition, preceptors indicated that when a student takes initiative it increases their initiative, which provides more opportunities for learning and engagement.

Student confidence was also found to be a benefit of trust. Students conveyed knowing their preceptor trusted them increased their confidence. When I asked Alison how it made her feel knowing her preceptor trusted her to work independently with patients she stated:
I feel confident. Even if he [preceptor] trusts me with just two patients that day, I go in and I feel confident. I think, “I’m completely on my own. You didn’t even need to tell me what to do.” I also feel like, “Oh, maybe I can actually do this out in the real world, because I can do it here.”

Other students also expressed feelings of confidence and a having a sense of affirmation. Students asserted that trust makes them feel as if “I can actually do this [athletic training] as a career,” “I’m not wasting my time,” and “I won’t screw up when I’m on my own someday,” thus illustrating how trust increases students’ and confidence and initiative.

Factors That Hinder Engagement

The level of comfort was also found to hinder engagement in clinical education. Participants voiced if they were not comfortable, engagement would still be present, but it would be limited. Rita stated that if her preceptor was not comfortable with her, “she [preceptor] would take over more of the patients so I would have less of a workload during clinicals. So, I wouldn’t get that hands-on experience that I need to be engaged.” Corey articulated how not feeling comfortable would:

Limit discussion, because I wouldn’t go to them [preceptor] for questions, I would go to my classmates and professors instead, and if they didn’t have an answer, I would just look it up myself, instead of just going straight to my preceptor.

These students’ portrayals identified hands-on skills and discussions as the forms of engagement that would be limited in clinical education, thus revealing a decrease in engagement. Similarly, preceptors also described limited engagement. Hannah communicated how not feeling comfortable would impact clinical education experiences,
“We [student and preceptor] would be just going through the motions and coming in here to get it over with or . . . And not taking advantage of opportunities to learn.” These depictions illustrate how not feeling comfortable would prevent the student and preceptor from engaging with each other, which would decrease opportunities for learning and engagement. In addition, learning experiences that included hands-on skills and discussions were described to be some of the most engaging, thus demonstrating how not having a comfortable preceptor/student relationship would decrease the quantity and quality of engagement in clinical education.

Similar to feeling comfortable, trust was also found to hinder engagement in clinical education. Participants conveyed a lack of trust would decrease opportunities for learning and engagement. Rita described the influence trust has on engagement:

I had one rotation where I didn’t feel engaged, I felt like my preceptor didn’t trust me, and I feel like he didn’t believe in my clinical skills. He was just like a negative person overall and really didn’t focus on all the good stuff that I did. He was very quick to point out all the bad stuff that I did. I felt like that kind of made me step back a little and not really want to engage.

Rita’s depiction not only demonstrated limited engagement, but it also referenced aspects of the preceptor/student relationship that suggests not feeling comfortable. Thus, it appears that not feeling comfortable could also prevent trust from even being established.

Preceptors further discussed how trust would limit engagement in clinical education. Dean expressed this as, “There would be engagement, but I don’t know if there would be a lot of meaningful engagement . . . it would be limited to observations
... and there would be less discussion.” Jamie agreed by stating, “I don’t think there would be an opportunity to increase their level of engagement. I think they’d be stuck at the beginning stages.” In addition, the majority of preceptors explained how they would always be observing the student and not allow supervised autonomy. An absence of supervised autonomy would prevent students from being exposed to learning experiences that require independence, critical thinking, decision-making, and complex cognitive processing. In addition, supervised autonomy was recognized as an opportunity with the deepest engagement. Thus, just like feeling comfortable, not having trust within the preceptor/student relationship would hinder engagement because it reduces the quantity and quality of engagement.

**Role of Engagement in Clinical Education**

When asked to identify the role engagement has in clinical education participants identified: (a) application of knowledge to authentic situations and (b) exposure to real-world experiences. Participants’ descriptions included mental application, critical thinking, physical application, and the forms of engagement (i.e., observations, hands-on skills, discussion, and purposeful dialogue). In addition, participants’ explanations integrated various real-world experiences. Thus, both roles are discussed to obtain a holistic depiction of engagement in clinical education.

**Application of Knowledge to an Authentic Situation**

Initially, participants defined the role of engagement as the application of knowledge. However, to gain further insight I asked participants to explain the difference between engagement in didactic and clinical education. Every participant
identified an authentic situation as the primary difference. Rachael described authentic situations as, “people coming to us with problems and we are applying our knowledge to solve their problems.” Alison expressed it as, “Instead of just writing it or doing it on a classmate . . . I’m actually doing it on a patient.” Similarly, other participants designated authentic situations as “an actual patient” and “real people.”

Students’ and preceptors’ portrayals further revealed a connection between didactic and clinical education. Jackson described the role of engagement as:

Academics [didactic education] is building the foundation and giving them [students] all the knowledge and tools. We [preceptors] are allowing them to apply it here [clinical education] . . . It [engagement] bridges the gap between didactic education and the real world.

Other students also acknowledged the role of engagement as a link between didactic and clinical education. Corey interpreted the role of engagement as:

Applying what I learned in class by doing it in the clinical setting. I’m learning how to do it hands-on with a patient after learning the proper technique in class. I can then choose which technique I like better . . . It helps determine what skills you are going use in certain situations.

Based on participants’ interpretations it can be determined that the role of engagement is the application of knowledge to an authentic situation in a clinical environment. In addition, during the authentic situation the student applies his or her knowledge through the forms of engagement (i.e., observations, hands-on skills, discussion, and purposeful dialogue), which involves critical thinking, decision making, and cognitive processing.
This finding establishes engagement as the connection between didactic and clinical education. Figure 11 provides a visualization of the relationship between engagement and both areas of education.

![Figure 11. The role engagement in clinical education has on athletic training education](image)

**Real-World Experiences**

Participants also explained the role of engagement in clinical education was to expose students to real-world experiences. Real-world experiences were portrayed as the duties and responsibilities of an athletic trainer (e.g., documentation, setting up for practice/events, inventorying supplies, managing patient loads, etc.). Jamie defined real-life experiences as:

> Viewing the daily activities and what goes . . . not just athletic training stuff like evaluations, treatment, and rehabilitation, but all the monotonous stuff that goes on day-by-day . . . I think they [student] are able to really get a better sense of each individual clinical education site and the differences in job settings.
In addition, the clinical education environment was described as a main component of real-world experiences. James stated real-world experiences occur in:

An uncontrolled environment. There are different personalities that you have to deal with, there are coaches, there are a lot of noises, there are other athletes, there are distractions. There is a lot of things that you don’t get in the classroom.

Similarly, Hannah identified the environment as, “there’s really no predictability about what’s going to go on from day to day.” Other participants also termed the clinical education environment as “uncertain,” “uncontrolled,” and “unpredictable.”

Participants further emphasized the importance of engaging in real-world experiences. Jackson stated, “If you are in a controlled environment for a 100% of your academic career, then the first sign of something that’s not within that environment could throw you in a tailspin.” These findings demonstrate the need to expose students to real-world experiences so they are prepared to enter the work force as certified athletic trainer. In addition, other participants expressed the significance of real-world experiences is to “develop social skills,” “understand and manage work-life balance,” and “learn how to deal with stress.”

**Summary of Findings**

This chapter presented findings of a single case study on engagement in athletic training clinical education at KSU. The case included preceptors’ and students’ personal accounts of clinical education experiences. The findings comprised of five major themes: (1) engagement defined, (2) depth of engagement, (3) forms of engagement, (4) the preceptor/student relationship, and (5) the role of engagement in clinical education.
Participants defined engagement as active learning and application of knowledge (mental and physical). Engagement in clinical education was also described as learning experience that involved critical thinking (i.e., application, justification, reasoning, and decision-making) and cognitive processing. However, learning experiences that required complex cognitive processing were considered to be deeper engagement. Specifically, participants designated experiences that involved learning new content or application of known content to a new situation to involve complex cognitive processing.

In addition, participants’ portrayals of engagement identified four forms of engagement: observations, hands-on skills, discussion, and purposeful dialogue. Preceptors used the forms of engagement as methods to assess students’ competence. Once a student achieved competence, trust between the preceptor and student was established.

Furthermore, the preceptor/student relationship was found to promote and hinder engagement in clinical education. Participants expressed feeling comfortable and trust increased opportunities for learning and engagement. Specifically, trust allowed for supervised autonomy, which was classified as a learning experience with the deepest engagement because it included independence, critical thinking, decision-making, and complex cognitive processing. Feeling comfortable and trust were also recognized to hinder engagement in clinical education. In particular, not feeling comfortable and a lack of trust limited engagement by not allowing hands-on skills, discussion, and supervised autonomy to occur.
Finally, participants identified the role of engagement in clinical education to be the application of knowledge to an authentic situation. An authentic situation was characterized as real patient in the clinical education environment. In addition, when applying their knowledge to an authentic situation, students were exposed to real-world experiences. Real-world experiences were portrayed as the daily duties and responsibilities of an athletic trainer, development of social skills, managing work-life balance, and coping with stress, which occur in an uncontrolled environment. Lastly, engagement in clinical education was recognized as the connection between didactic and clinical education, thus revealing the influence didactic education has on clinical education.
CHAPTER V
DISCUSSION, IMPLICATIONS, AND CONCLUSION

The aim of this study was to explore the role of engagement in clinical education within Kent State University’s (KSU) athletic training program (ATP). This research is warranted because the athletic training education literature has predominately focused on didactic education, placing less emphasis on clinical education. In addition, athletic training is facing a “transition to practice” issue, where newly credentialed athletic trainers (AT) are struggling to apply their knowledge and skills to authentic situations in clinical practice (Carr & Volberding, 2012; Massie et al., 2009). The issue with transitioning to clinical practice identifies a possible weakness in the athletic training clinical education model. Failure to incorporate a strong clinical education model into the curriculum could be due to lack of research in clinical education. An area that could aid in development of a better model is researching the role of engagement in clinical education.

Previous research in didactic education clearly advocates for use of engagement as a way to facilitate learning. Thus, examination of engagement in clinical education is needed to determine if engagement can assist with enhancing students’ clinical education experiences. Furthermore, investigation of engagement from the preceptors’ and students’ perspective is prudent because there currently is no evidence that observes both viewpoints in clinical education.
Overview of the Study

The current study utilized a qualitative case study design to further understand the role of engagement in athletic training clinical education. The research questions that directed the study were:

1. To what extent are students engaged in their clinical experiences, and if engaged, how do they describe that engagement?
2. What role(s) does engagement have in athletic training clinical education at KSU?

KSU ATP was purposefully selected as the case because it provides students with comprehensive clinical education experiences and has the attributes of graduate education. Participants included seven preceptors and seven students (four juniors and three seniors) who equally represented various clinical education sites (i.e., college athletics, rehabilitation clinics, and high schools). Data collection involved two interviews (initial and follow-up) and two observations per participant. All forms of data were collected by hand written field notes and audio recordings of interviews. Data analysis stemmed from Strauss and Corbin’s (1990) grounded theory approach and occurred throughout and after data collection. Data were triangulated to corroborate evidence by comparing and contrasting data from preceptors’ and students’ perspectives, interviews, and observations. Data analysis resulted in five major themes: (1) engagement defined (2) depth of engagement, (3) forms of engagement, (4) the preceptor/student relationship, and (5) the role of engagement. The findings from the themes were used to inform the discussion, implications, and conclusions of this study.
In this chapter, I begin by discussing the findings of each theme and their association to the current athletic training education literature. Next, I offer implications the findings have on clinical education experiences, preceptor training, and future directions for athletic training education. I then explain the limitations of the study. Finally, I provide suggestions for further research.

**Discussion of Findings**

The findings of the current study are discussed individually by theme. Engagement is examined in relation to the athletic training education literature. In addition, my discussion establishes how some findings support the current literature, whereas others offer new insights that expand upon previous research. I demonstrate how participants’ definitions of engagement and the forms of engagement directly align with the pedagogical approaches and instructional strategies witnessed in athletic training education literature. In addition, I connect the forms of engagement to specific approaches and strategies to provide insight on how to conceptualize stronger clinical education experiences. Furthermore, I explain how the depth of engagement, the preceptor/student relationship, and the role of engagement help inform and contribute to the body of literature. Lastly, there is only one study that examined engagement in athletic training clinical education, thus I conclude by relating the findings of the current study to this foundational research.

**Engagement Defined**

Based on the findings of this study and previous research, engagement includes physical activity and social interactions. The current study defined engagement in
clinical education as active learning, which is comprised of physical tasks and personal interactions. These characteristics are the same as those witnessed in pedagogical approaches and instructional strategies in the athletic training education literature which include: CBL, PAL, SDL, mastery learning, reflective observation, mentoring, simulations, EBTM, multimedia technology, PLAM, IF-AT, technical and tactical skills, PAS, feedback, self-discovery, critical thinking, sharing information, and modeling (Armstrong & Jarriel, 2015; D. C. Berry, 2013; Bowman & Laurent, 2011; Carr et al., 2011; Hankemeier & Van Lunen, 2011; Henning et al., 2006; Henning et al., 2012; Hughes & Berry, 2011; Lafave et al., 2013; Manspeaker et al., 2011a, 2011b; Mazerolle et al., 2015; Mazerolle et al., 2016; Nottingham & Henning, 2014a; Speicher et al., 2012; Tivener & Gloe, 2015b; Walker & Weidner, 2010; Walker et al., 2015; Weidner & Popp, 2007). Modeling, PAL, and simulations use physical activity to engage students during learning experiences (Armstrong & Jarriel, 2015; Bates, 2014; Carr et al., 2011; Hankemeier & Van Lunen, 2011; Henning et al., 2006; Henning et al., 2012; Tivener & Gloe, 2015a; Walker et al., 2015; Weidner & Popp, 2007). Simulations, reflective observation, modeling, PAL, technical and tactical skills, and questioning and feedback promote learning by creating an environment where student engage and interact with others (Armstrong & Jarriel, 2015; Barnum et al., 2009; Bates, 2014; Carr et al., 2011; Hankemeier & Van Lunen, 2011; Hawksins et al., 2015; Henning et al., 2012; Mazerolle et al., 2015; Tivener & Gloe, 2015a; Walker et al., 2015). Interesting, all of the pedagogical approaches and instructional strategies within clinical education facilitate learning through social interactions.
Students’ and preceptors’ portrayals from the current study contribute to the literature by providing more depth and breadth on the definition of engagement. Active learning was further characterized as being observant and conscientious during clinical education experiences, thus not limiting engagement to physical activity and social interactions. Participants also included application of knowledge as a main component of engagement, which was described as physical and mental. Physical application was identified as performing a hands-on skill, while mental application was recognized as critical thinking. Physical application was considered to be the same as physical activity, which was previously discussed. However, participants’ explanations of mental application highlight critical thinking as a component of engagement.

CBL, PAL, simulations, EBTM, technical and tactical skills, questioning and feedback, and modeling identify mental application by creating learning experiences that warrant critical thinking, decision making, and clinical reasoning skills (Armstrong & Jarriel, 2015; Barnum et al., 2009; Bates, 2014; Carr et al., 2011; Hankemeier & Van Lunen, 2011; Hawkins et al., 2015; Henning et al., 2006; Henning et al., 2012; Manspeaker et al., 2011a, 2011b; Speicher et al., 2012; Walker et al., 2015). PAL, simulations, and technical and tactical skills integrate mental and physical application of knowledge by including hands-on skills into learning experiences. Intriguingly, although limited, the majority of instructional strategies identified in clinical education incorporated critical thinking (Barnum et al., 2009; Hankemeier & Van Lunen, 2011; Henning et al., 2006; Henning et al., 2012). Therefore, this study and previous research
establishes use of critical thinking as a way to engage students during clinical education experiences.

Furthermore, the attributes of engagement connect to the theoretical framework of this study in multiple ways. The social learning theory (SLT) is defined as a cognitive process that occurs in a social context comprised of personal, behavioral, and environmental factors. The SLT is based on two constructs: observational learning and mediational processes (Bandura, 1977). Active learning was depicted as paying attention and being observant, which represents observational learning. Application of knowledge (i.e., mental and physical) and critical thinking embody the cognitive processing that transpires during engagement. Specifically, mental application highlights the use for mediational processing during learning experiences. These examples support aspects of the SLT, thus recognizing how learning occurs in a social context.

**Depth of Engagement**

For the current study, students’ classification of tasks offered more depth to the body of literature by further defining engagement. Tasks that were classified as “contributing” and “engaged” were found to have the same characteristics as participants’ initial descriptions of engagement. However, when asked to explain the difference between contributing and engaged tasks, the main distinction was thought process. Contributing tasks required basic cognitive processing (i.e., remembering, understanding, and application), whereas engaged tasks involved complex cognitive processing (i.e., application, analyzing, evaluating, and creating). In addition, students identified clinical education experiences where they applied content to a new situation as more engaging
because they incorporated mental and physical application of knowledge, thus demonstrating learning experiences that required complex cognitive processing to have deeper engagement. Furthermore, this finding connects to the SLT, because cognitive processing is the main component of mediational processing.

Students’ depictions of engagement as a cognitive process coincides with pedagogical approaches and instructional strategies that incorporate critical thinking, decision-making, and clinical reasoning into learning experiences (Armstrong & Jarriel, 2015; Bates, 2014; Carr et al., 2011; Hawkins et al., 2015; Henning et al., 2006; Henning et al., 2012; Tivener & Gloe, 2015a; Walker et al., 2015). However, this study contributes to the literature by emphasizing the need to use approaches and strategies that trigger complex cognitive processing. In addition, there currently is no qualitative evidence that examines students’ thought process as part of the learning experience in athletic training education. Thus, more research is needed to examine students’ thought process during didactic and clinical education learning experiences to identify effective teaching methods that utilize complex cognitive processing.

**Forms of Engagement**

The current study identified four forms of engagement: observation, hands-on skills, discussion, and purposeful dialogue; all of which are supported in the athletic training education literature. The majority of pedagogical approaches and instructional strategies (e.g., CBL, EBTM, reflective observation, questioning and feedback) utilized discussion and purposeful dialogue to engage students and facilitate learning (Barnum et al., 2009; Hankemeier & Van Lunen, 2011; Manspeaker et al., 2011a; Mazerolle et al.,
Simulations, technical and tactical skills, PAL, reflective observation, and modeling also incorporated observations and hands-on skills into learning experiences (Armstrong & Jarriel, 2015; Bates, 2014; Carr et al., 2011; Hankemeier & Van Lunen, 2011; Hawkins et al., 2015; Henning et al., 2008; Henning et al., 2012; Mazerolle et al., 2015; Tivener & Gloe, 2015a), thus recognizing observations, hands-on skills, discussion, and purposeful dialogue as components of pedagogical approaches and instructional strategies that facilitate learning through engagement. This association establishes the forms of engagement as teaching methods that use engagement to promote learning in clinical education. Interestingly, closer examination of the athletic training education literature reveals stronger connections between observations, hands-on skills, discussion, and purposeful dialogue to specific pedagogical approaches and instructional strategies in athletic training education.

Reflective observation and modeling were instructional strategies present during clinical education experiences that incorporated the forms of engagement (Hankemeier & Van Lunen, 2011; Mazerolle et al., 2015). Reflective observation is when the student gains understanding by watching and reflecting on the behaviors and actions of others (Mazerolle et al., 2015). However, when a student observes a more experienced person, this is referred to as modeling (Bandura, 1977). Both of these strategies used observations, hands-on skills, discussion, and purposeful dialogue to engage students and facilitate learning. However, during the clinical education experiences, the preceptor is often modeling the hands-on skills, thus not permitting students to practice the behaviors
they witnessed. Based on the findings of the current study, learning experiences that incorporated mental and physical application of knowledge were found to have deeper engagement, thus identifying a need to provide students with more opportunities for hands-on skills during clinical education experiences.

Questioning and feedback was another instructional strategy witnessed in clinical education that used the forms of engagement. Questioning and feedback promotes learning by asking questions and providing feedback to students. During questioning, preceptors ask students “what,” “so what,” and “now what” questions to stimulate critical thinking and develop clinical reasoning skills. The preceptor then provides feedback to a student about their knowledge, skill, and acquisition (Barnum et al., 2009). This instructional strategy used questioning and feedback to engage students, which are the same attributes participants of this study used in their portrayals of discussion and purposeful dialogue, thus recognizing discussion and purposeful dialogue as instructional strategies that facilitate learning through engagement. However, when feedback alone was examined in clinical education, the evidence strengthened the need to incorporate discussion into clinical education experiences.

Previous research examined feedback in athletic training clinical education through direct observations and interviews. During observations, Nottingham and Henning (2014a) found the majority of feedback occurred immediately after a student completed a skill and was given to confirm behavior, reinforce performance, or promote improvement. In addition, 66% of feedback was related to students’ clinical skill performance, while only 16% stimulated critical thinking (Nottingham & Henning,
This outcome demonstrates the majority of feedback rarely encourages critical thinking, which emphasizes the need to include questioning into clinical education experiences. The findings of the current study support this by identifying discussion as a form of engagement that triggers critical thinking. Furthermore, Nottingham and Henning (2014a) determined students’ and preceptors’ perceived feedback to be a vital part of the learning experience, because it advances, confirms, and corrects student behavior, thus acknowledging the importance of feedback in clinical education. This evidence supports this study, which identified feedback as a type of purposeful dialogue.

The forms of engagement also relate to aspects of the SLT. Discussion and purposeful dialogue promote learning by engaging students through social interactions. Observations reference observational learning and modeling, which is when an individual learns by watching the behaviors of others, therefore demonstrating learning to be a cognitive process that occurs in a social context.

Preceptor/Student Relationship

The findings of the current study identified the preceptor/student relationship to have the greatest influence on engagement in clinical education. Specifically, feeling comfortable and trust were recognized to promote and hinder engagement. Feeling comfortable promoted engagement, because it increased students’ and preceptors’ initiative, which resulted in more opportunities for learning. Similarly, trust also increased opportunities for learning and engagement because the student had achieved competence, which allowed them to learn new information and apply their knowledge to authentic situations. In addition, feeling comfortable and trust correspond to the SLT,
because they are factors that impact the social context of learning experiences. Trust and feeling comfortable are personal factors because they are beliefs that are specific to an individual, whereas feeling comfortable is a behavioral factor, because it increased initiative, which is an action of an individual.

This study contributes to previous research that examined student characteristics preceptors found desirable, which included student initiative, communication skills, and intelligence (Carr, Thomas, Paulsen, & Chiu, 2016). However, Carr and colleagues’ study was limited to quantitative analysis, thus failing to provide insight on the ‘why’ preceptors desired these characteristics. Yet, the findings of the current study could assist in explaining potential relationships amongst desirable student characteristics and engagement.

Based on the findings of the current study, feeling comfortable could correlate to communication and student initiative. Participants stated conversations with their student and/or preceptor is what made them feel comfortable. As a result, this increased their initiative, which led to more engagement. This finding suggests a potential reason preceptors might have desired communication skills is because it allowed both parties to become comfortable, which then increased students’ initiative. In addition, previous research identified intelligence as another desirable student characteristic, which could be associated with trust. The current study determined trust increased opportunities for learning and engagement. However, to establish trust, students had to achieve competence by demonstrating their knowledge, skill, and acquisition to their preceptor. This finding proposes a possible reason preceptors desired intelligence is because having
a strong knowledge base allowed the student to attain competence, which provided more opportunities for learning. However, these interpretations are clearly based on speculation and cannot be confirmed. Yet, the findings of this study do add to the current literature by demonstrating how the preceptor/student relationship influences clinical education experiences.

**Role of Engagement**

The current study identified the role of engagement in clinical education to be application of knowledge to authentic situations. Authentic situations were depicted as real-life patients/experiences. Previous research has described clinical education experiences as realistic experiences that allowed students to develop their clinical skills. In addition, application of knowledge was found to be the most important aspect of clinical education experiences (Benes et al., 2014). Realistic experiences and application of knowledge were also acknowledged in the current study as main components of engagement, thus establishing them as important aspects of clinical education. Furthermore, authentic situations are an example of an environmental factor, because their presence influenced learning.

The same research study also determined the student plays an integral role in the outcome of clinic education experiences. Students’ descriptions of their role included a willingness to learn and engage. In addition, the preceptors’ and students’ portrayals had accounts of taking initiative during clinical education experiences (Benes et al., 2014). This research supports the findings of the current study by recognizing engagement as a component that influences learning during clinical education experiences.
The current study also determined that during authentic situations, the student applies their knowledge through the forms of engagement (i.e., observations, hands-on skills, discussion, and purposeful dialogue), which involves critical thinking, decision making, and cognitive processing, thus exposing engagement as the connection between didactic and clinical education. This finding contributes to the athletic education training literature by identifying engagement in clinical education as a key component to learning. However, more research on engagement in clinical education is needed to further determine its role within athletic training education.

**Engagement in Clinical Education**

Presently, there is only one study that examined engagement in athletic training clinical education. Mazerolle and colleagues (2014) identified engagement in clinical education as active learning that was guided by communication, feedback, and volume. Students expressed having good communication and receiving feedback from their preceptor as crucial components of engagement. In addition, students specified volume to be an important aspect of engagement, which was described as having multiple patient-interactions (Mazerolle et al., 2014). The findings of the current study further support the results of this research in several ways.

First, the current study described engagement as active learning that correlates to the findings of Mazerolle and colleagues (2014). Second, Mazerolle and colleagues’ identification of communication and feedback as components of engagement correspond to the current study’s findings of the preceptor/student relationship. Participants of the current study expressed having good communication (i.e., openly discussing ideas, active
listening, and providing constructive criticism) with their student or preceptor allowed them to feel comfortable, which increased opportunities for engagement. In addition, feedback was recognized as a form of engagement, thus supporting its use as a means to facilitate engagement in clinical education. Lastly, Mazerolle and colleagues determined multiple patient-interactions to be a component of engagement. This relates to the findings of the current study that acknowledged engagement to be the application of knowledge to authentic situations, which involves patient-interactions, thus reinforcing the need for students to apply their clinical skills through authentic situations for engagement in clinical education to occur.

Furthermore, the findings of the current study add to the body of literature by providing more evidence on engagement in clinical education. This study offers additional insight on engagement by identifying influences the preceptor/student relationship has on clinical education experiences, which reveal the preceptor/student relationship to be a factor that impacts engagement. In addition, participants’ descriptions of engagement also included mental and physical application, which provides a stronger depiction of the cognitive process behind application of knowledge. Therefore, these findings contribute to the athletic training education literature by acknowledging cognitive processing as a component of engagement and establishing the preceptor/student relationship to have an influence on clinical education experiences.

**Implications**

The findings of the current study can be used to inform athletic training education and aide in the development of a stronger clinical education model. Specifically,
engagement as a way to facilitate learning and the preceptor/student relationship provide insight on how to improve students’ clinical education experiences. In addition, this study strengthens the need for preceptor training that includes instruction on teaching, assessment, and evaluation of students. Furthermore, the current study can also assist by offering future directions for athletic training education.

**Clinical Education Experiences**

Participants identified the forms of engagement (i.e., observations, hands-on skills, discussion, and purposeful dialogue) as methods that engage students by creating an active learning environment, thus clinical education should provide students with opportunities to observe, perform clinical skills, and participate in discussion throughout the learning process. In addition, when the forms of engagement were examined individually, discussion was found to have the deepest engagement, because it stimulated critical thinking. Therefore, inclusion of discussion into clinical education experiences is crucial because it stimulates critical thinking and fosters clinical reasoning skills.

Clinical education experiences that included hands-on skills were reported to have deeper engagement because they contained both types of application of knowledge (i.e., mental and physical) and required complex cognitive processing. In addition, experiences where students learned new skills, applied knowledge to a different situation, or allowed supervised autonomy were found to have the deepest engagement, thus reinforcing the need for clinical education experiences to include exposure to new content and authentic situations where students have the opportunity to apply their knowledge and develop autonomy.
Lastly, the preceptor/student relationship can be used to inform athletic training education and assist in developing stronger clinical education experiences. The current study determined the preceptor/student relationship to have the biggest influence on engagement, thus exposing the impact student placement has on clinical education experiences. Currently, accreditation standards delineate the types of clinical education experiences students should have prior to graduation. These requirements are based on setting (i.e., high school, college athletics, rehabilitation clinic), time of year (i.e., pre-season, in-season, out of season), gender (i.e., male specific sport, female specific sport, sport with both sexes), sport (i.e., upper extremity specific, lower extremity specific, individual specific, team specific), and equipment intensive (i.e., football, ice hockey, men’s lacrosse; CAATE, 2015). Due to these policies, students’ clinical placements are often assigned to meet accreditation standards. However, findings of the current study emphasize the need to determine clinical placement based on preceptor/student relationship instead of accreditation standards, because it was found to promote and hinder engagement in clinical education.

Identification of attributes that create a comfortable preceptor/student relationship could also aid in student clinical placement. Participants of the current study described the preceptor/student relationship using characteristics such as: “approachable,” “willing to help,” “talkative,” “out-going,” and “positive attitude.” These portrayals offer insight into attributes that could assist with clinical placements by identifying preceptors and students that would be a good match/fit. However, research that effectively examines the
preceptor/student relationship is needed to establish characteristics of a comfortable relationship.

Interestingly, this finding supports previous research that found the match/fit of the preceptor and student to impact clinical education experiences. Preceptors and students expressed that when they got along with each other, clinical education experiences were more positive (Benes et al., 2014). However, this study did not elaborate on the attributes of a positive experience, nor did it examine characteristics that help determine a proper preceptor/student match/fit. Therefore, more research is needed to examine the preceptor/student relationship in order to assist with student clinical placements.

**Preceptor Training**

Currently, athletic training education has minimal requirements regarding preceptor selection and training. The only prerequisite to being a preceptor is national athletic training certification. In addition, accreditation standards require preceptor training, yet they do not delineate what preceptor training should entail (CAATE, 2015). Having basic preceptor qualifications could be a reason there is a lack of emphasis on preceptor training in athletic training education, which is discussed within the literature.

Research on preceptor preparation identified preceptor training to be a formality that included discussion of policies and procedures (Nottingham, 2015), thus failing to provide preceptors with education on teaching, evaluation, and assessment of students. Additionally, preceptors have expressed the need for more training in developing critical thinking skills, teaching clinical decision making, and evaluating students (Hankemeier,
Kirby, Walker, & Thrasher, 2017). Intriguingly, this evidence coincides with findings of this study.

The current study determined preceptors used observations, hands-on skills, discussion, and purposeful dialogue to assess students’ ability and determine competence. Yet, preceptors’ descriptions of student assessment were solely based on decision making that aligned with their own. In addition, when asked if they assessed students using other methods, none of the preceptors were able to provide an alternative form of assessment. Therefore, based on the current study and previous research, it appears preceptors need training on student assessment and evaluation.

Preceptor training should include instruction on teaching, assessment, and evaluation of students. Instruction on teaching philosophies such as adult learning, Bloom’s taxonomy, the zone of proximal development, and modeling would give preceptors the foundational knowledge they need to properly instruct students. In addition, preceptor training should contain education on pedagogical approaches and instructional strategies that facilitate learning through engagement, active learning, and critical thinking, since it is clearly supported within the didactic education literature and the findings of the current study. Specifically, PLAM is an instructional strategy witnessed in didactic education that could assist in assessing students during clinical education experiences.

PLAM is a framework that can be used to assess students’ knowledge during and after learning experiences to evaluate their understanding of content. After the assessment, the teacher examines the gaps in students’ understanding to create
personalized learning experiences (Earl, 2003). Within athletic training, PLAM was used to develop SOAT, which is a specific assessment tool that collects information on students’ knowledge of orthopedic evaluations. Lafave and colleagues (2013) found that students who were exposed to SOAT in an orthopedic assessment course had a significantly higher competence than students who were not exposed to SOAT. These outcomes support the use of PLAM and SOAT as an effective assessment tool within didactic education, which could be advantageous if applied to clinical education. PLAM could be used to conceptualize various assessment tools to aid preceptors with evaluating students and competence. This could enhance clinical education experiences by providing preceptors with a strategy to properly assess students’ clinical skills and ability.

Lastly, preceptor training should also be ongoing so preceptors have the ability to develop their teaching, assessment, and evaluation skills over time. Incorporating multiple training sessions would provide preceptors with more knowledge to support their clinical instruction, which would hopefully result in stronger clinical education experiences.

**Future Directions**

Over the next four years, athletic training will go through an education reform. In 2022, an entry-level Bachelor’s degree will be removed as a route to athletic training certification. Instead, a Master’s in Athletic Training, known as the PM, will be required to obtain entry into the field of athletic training. In addition, athletic training is currently facing a “transition to practice” issue, where newly credentialed ATs struggle to apply their knowledge and skills to authentic situations in clinical practice (Carr & Volberding,
2012; Massie et al., 2009). The combination of the upcoming educational reform and issues with ATs’ inability to transition the clinical to practice provides athletic training education with a unique opportunity to evaluate and assess their current curriculum model.

As previously discussed, ATPs should provide students with clinical education experiences that facilitate learning through active learning and engagement. ATPs should also offer preceptor training that focuses on teaching, evaluation, and assessment of students. Implementing these strategies could assist in developing a better clinical education model. The current study also provides insight into the relationship between didactic and clinical education, which could help inform future directions for athletic training curriculum and instruction.

The current study identified the role of engagement as the application of knowledge to authentic situations. During authentic situations, students apply their knowledge through the forms of engagement (i.e., observations, hands-on skills, discussion, and purposeful dialogue), which involves critical thinking, decision making, and cognitive processing, thus acknowledging how engagement in clinical education acts as the connection between didactic and clinical education. This finding provides athletic training education with two opportunities: (a) evaluate the current clinical education model to determine the level of engagement during clinical education experiences, and (b) consider how didactic education can better assist clinical education so more engagement can occur during clinical education experiences.
Limitations

There are a few limitations to the current study. This study is restricted to a single case study of an ATP. Conducting research at other ATPs may reveal different findings. The current study was also limited to an undergraduate program, although athletic training education currently offers entry-level degrees at the undergraduate and graduate level. Examining entry-level graduate ATPs could produce alternative results.

Another limitation was studying the ATP where I am currently employed. It is possible that having established relationships with the participants could have impeded or influenced their responses. However, I made sure to openly disclose this during recruitment, consent, and interviews. In addition, I used my research journal and peer debriefer to reflect on my experiences to unveil any bias I had.

Areas of Further Study

The current study determined cognitive processing to be a key component of engagement. In particular, students classified learning experiences that required complex cognitive processing to have deeper engagement. Thus, more research on students’ thought process during learning experiences is needed to identify teaching methods that trigger complex cognitive processing.

In addition, the preceptor/student relationship was recognized as the factor that promotes and hinders engagement in clinical education the most. Specifically, feeling comfortable and having trust were found to increase opportunities for learning and engagement. Therefore, further investigation of the preceptor/student relationship is needed to determine personal, behavior, and environmental factors that allow an
individual to feel comfortable and establish trust. Additional research in this area could also assist program directors and clinical education coordinators with student clinical placements by providing characteristics that determine a good preceptor/student match/fit.

Lastly, this study found the role of engagement in clinical education to be a link between didactic and clinical education. More studies on engagement in clinical education are warranted to establish its role(s) within athletic training education. Furthermore, the current study is the only evidence on engagement that collected data through observations while examining both perspectives of clinical education experiences. Therefore, future research on engagement in athletic training clinical education should include observations of students and preceptors.

**Conclusion**

The athletic training education literature strongly advocates for pedagogical approaches and instructional strategies that use active learning, engagement, and critical thinking to facilitate learning. In addition, previous research on engagement in clinical education depicted engagement as active learning. Given the findings of the current study, it seems engagement is active learning that occurs during clinical education experiences, which supports the present body of literature.

In addition, this case study exemplified why more research in clinical education is warranted. Historically, the majority of athletic training education research has been conducted in didactic education, thus overlooking clinical education. Due to the lack of evidence, this study attempts to bring attention to the role engagement in clinical
education has on learning. This is problematic because athletic training is currently going through an education reform and experiencing a transition to practice issue. Therefore, it is hopeful that the findings of this study can be used to enhance students’ clinical education experiences and develop a stronger clinical education model that could assist with transition to practice issues.
APPENDIX A

STUDENT INITIAL INTERVIEW PROTOCOL
Appendix A

Student Initial Interview Protocol

Interviewer: ____________________________________________________________

Interviewee: ____________________________________________________________

Institution: ________________________________________  Date: ____________

Start Time of Interview: ______________  End Time of Interview: ______________

Context of Interview: _____________________________________________________

Introduction:

I am ______________________________ from Kent State University.

Principal Investigator will discuss the following:
- General purpose of the study
- Who is involved in the process (participants)
- Why the participant’s cooperation is important
- What will happen with the collected information and how the participant/target
group will benefit
- Any questions?

Background:

1. State your name.

2. What year are you in at Kent State University?

3. What year are you in for the athletic training program?

4. Why did you choose athletic training as a major? Career?

Clinical Education Experiences:

5. What is your current clinical rotation assignment? How many preceptor(s) do you have? Have many students are also assigned to the same clinical rotation?
6. What were your past clinical rotation assignments? How many preceptor(s) did you have? Have many students were also assigned to the same clinical rotation?

7. Describe what your clinical education experiences are like.
   a. Probes: What types of things did you do (tasks, skills, activities)? What types of things/events occur?

**Engagement in Clinical Education:**

8. Define what engagement means to you.
   a. Probes: Think about a time you felt engaged during your clinical rotation. What was it about that experience that made you feel engaged?

   a. Probes: What types of experiences demonstrate engagement (tasks, skills, activities, events)?

10. You defined engagement as . . . When thinking about that definition, what factors promote engagement in clinical education? Hinder engagement in clinical education?
    a. Probes: Factors would include personal, behavioral, or environmental aspects of the clinical education experience
       i. Personal factors would include emotions/feelings, age, sex, gender, race, etc.
       ii. Behavioral factors would be things you, a preceptor, another student, or a patient does.
       iii. Environmental factors would be location (athletic training room, gymnasium, soccer field), number and/or type of people present (patients/students/preceptors), type of activity (game, practice, treatment), or characteristics of the environment (noise, lighting, temperature

11. Describe how your preceptor would teach you to tape an ankle/evaluate a patient/administer a therapeutic modality/etc.
    a. Probes: How would they structure the learning experience? What would they have you do?

12. Think about a time you felt engaged during your clinical experience. Describe the experience.
    a. Probes: What did you do during the experience? What thought process did you go through? Did you recall past experiences?

13. What role does engagement have in clinical education at KSU’s ATP?
a. Probes: Role is defined as a function or part performed especially in a particular operation or process

14. Based on the description of engagement you provided, do you feel engaged during your clinical experiences? Why or why not?
   a. Probes: If needed, I will reference specific tasks, skills, etc. the participant mentioned to provide clarity.
   b. If yes, how so?
   c. If no, what would be needed to feel engaged during your clinical experiences?

15. End the interview by asking the participant if they have any questions they would like to ask.
Appendix B

Preceptor Initial Interview Protocol

Interviewer: ____________________________________________________________

Interviewee: ____________________________________________________________

Affiliate Site: ____________________________________________________________

Institution: ______________________________________  Date: __________

Start Time of Interview: _____________  End Time of Interview: _____________

Context of Interview: _____________________________________________________

Introduction:

I am ______________________________ from Kent State University.

Principal Investigator will discuss the following:
  • General purpose of the study
  • Who is involved in the process (participants)
  • Why the participant’s cooperation is important
  • What will happen with the collected information and how the participant/target group will benefit
  • Any questions?

Background:

1. State your name.

2. How many years have you been a certified athletic trainer?

3. Why did you choose athletic training as a career?

Preceptor Experience:

4. How long have you supervised athletic training students as preceptor?

5. How long have you been a preceptor for KSU?
6. Do you currently act as preceptor for institutions other than KSU?

**Clinical Education Experiences:**

7. What is the affiliate site where you are currently employed (i.e., college athletics, high school, rehabilitation clinic)? How long have you been employed there?

8. Currently, how many athletic training students do you supervise as a preceptor?

9. Describe what clinical education experiences with your student(s) are like.
   a. Probes: What types of experiences did you do with the student (tasks, skills, activities)? What types of things/events occur?

**Engagement in Clinical Education:**

10. Define what engagement means to you.
   a. Probes: Think about a time you felt the student was engaged during a clinical experience. What was it about that experience that made you feel the student was engaged?

   a. Probes: What types of experiences demonstrate engagement (tasks, skills, activities, events)?

12. You defined engagement as . . . When thinking about that definition, what factors promote engagement in clinical education? Hinder engagement in clinical education?
   a. Probes: Factors would include personal, behavioral, or environmental aspects of the clinical education experience
      i. Personal factors would include emotions/feelings, age, sex, gender, race, etc.
      ii. Behavioral factors would be things you, a preceptor, another student, or a patient does.
      iii. Environmental factors would be location (athletic training room, gymnasium, soccer field), number and/of type of people present (patients/students/preceptors), type of activity (game, practice, treatment), or characteristics of the environment (noise, lighting, temperature

13. Describe how you would teach a student to tape an ankle/evaluate a patient/administer a therapeutic modality/etc.
   a. Probes: How would you structure the learning experience? What would you have the student do?
14. What role does engagement have in clinical education at KSU’s ATP?
   a. Probes: Role is defined as a function or part performed especially in a particular operation or process

15. Based on the description of engagement you provided, do you feel KSU student(s) is/are engaged during clinical experiences? Why or why not?
   a. Probes: If needed, I will reference specific tasks, skills, etc. the participant mentioned to provide clarity.

16. What is your perception on the transition to practice issue athletic training is currently facing?
   a. Probes: Do you think it exists? If so, why does it exist? Do you currently see transition to practice issues with students?

17. End the interview by asking the participant if they have any questions they would like to ask.
APPENDIX C

EXAMPLE OF OBSERVATION NOTES
## Appendix C

### Example of Observation Notes

<table>
<thead>
<tr>
<th>Environment: What is the context of the observation? When? Where? Describe the physical environment and setting. What objects are present in the setting? What is different from prior observations?</th>
<th>Descriptive</th>
<th>Reflective</th>
<th>Questions</th>
</tr>
</thead>
<tbody>
<tr>
<td>October 1st, 2017 at 2:00 pm in KSU MACC athletic training room. Current environment is the treatment room. Treatment room has 6 tables arranged across from each other with modality carts in between. There are 3 patients, 2 students, and 1 preceptor present. There is slight background noise being produced by the television on the wall.</td>
<td>The athletic training room is not busy and quiet. It appears that this type of environment is conducive for learning.</td>
<td>Ask participant about the characteristics of environment to see if this is a factor related to engagement.</td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Participant: Describe the participant’s behaviors, verbal, and non-verbal communication.</th>
<th>Descriptive</th>
<th>Reflective</th>
<th>Questions</th>
</tr>
</thead>
<tbody>
<tr>
<td>Student’s non-verbal communication: lack of eye contact, furrowing of eyebrows, crossing &amp; uncrossing of arms. Student’s verbal communication with patient: short questions, long pauses, quiet tone, and voice is shaky.</td>
<td>The student’s communication demonstrates a lack of confidence and uncertainty. They behaviors insinuate critical thinking and cognitive processing are occurring (eyebrows, long pauses). Behavior also demonstrates the need for help or assistance from preceptor.</td>
<td>Ask participant questions about the cognitive process they went through to perform the evaluation. This will determine if mediational processes/engagement occurred.</td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Actions/Interactions: What is the participant doing? Who are interacting with? How do they respond? How long did the action take? What types of learning is occurring (observational, mediational processes, active learning)?</th>
<th>Descriptive</th>
<th>Reflective</th>
<th>Questions</th>
</tr>
</thead>
<tbody>
<tr>
<td>Student is performing an evaluation on a patient while the preceptor and another student watch. The student does not interact with the preceptor during the evaluation. The evaluation takes 20 minutes.</td>
<td>Active learning is occurring because the student is physical doing something. No engagement with preceptor or student suggests mediational processes/engagement is not occurring.</td>
<td>Ask questions about not having interaction with preceptor or student. Would interactions have benefited the student during the learning experience? Engaged the student?</td>
<td></td>
</tr>
</tbody>
</table>
APPENDIX D

EXAMPLE OF STUDENT FOLLOW-UP INTERVIEW PROTOCOL
Appendix D

Example of Student Follow-Up Interview Protocol

Interviewer: ____________________________________________________________

Interviewee: ____________________________________________________________

Institution: ___________________________  Date: ____________

Start Time of Interview: ______________  End Time of Interview: ______________

Context of Interview: _____________________________________________________

Introduction:
1. Please state your name.

Initial Interview Questions:

Engagement Definition
2. You defined engagement in clinical education using the following terms: active listening, gathering information, application, and critical thinking. Do you still define engagement in clinical education this way? Why?

3. You also stated “being there isn’t enough.” What do you mean by that?

Engagement Description
4. When you described what engagement in clinical education looks likes you stated it occurs through observations, hands-on skills, and discussion. Do you still agree? Why?

5. When describing each of the types of engagement (observations, hands-on skills, and discussion) you used the term critical thinking. Does critical thinking have to be present to define the experience as engagement in clinical education? Why?
   a. Probe: If critical thinking is not present is there no engagement in clinical education?

6. You stated discussions are a form of engagement in clinical education. When you described what discussions look like you stated discussions involve asking questions, explaining the purpose of something, getting feedback, and informing/educating patients. In addition, you described discussion as being
collaborative where two or more parties are contributing to the conversation. Do you still agree? Why?

7. Are there any other types of conversations, other than discussion, where you feel engaged in clinical education? What do those conversations look like?
   a. Probe: Some examples based on your first interview and things I witnessed during observations are: explaining the purpose of something, information or educating patients/peers, and getting feedback. Do you see these as discussions or conversations? Why?
   b. Does the conversation need to include critical thinking to be defined as discussion?

8. If I gave you 2 words, dialogue & discussion, how would you define each term?
   a. How would you define purposeful dialogue?

Factors

9. When you described factors that promote or hinder engagement you stated the following:
   a. Promote:
      i. Personality dynamic – student, preceptor, patient, peers
      ii. Relationships – comfort, trust – preceptor, patients
   b. Hinder:
      i. Personality dynamic – student, preceptor, patient, peers
      ii. Relationship – comfort, trust – preceptor, patients
      iii. Personal – stressed, bad mood, not focused – student
      iv. Personal – shy, introvert – preceptor
      v. Behaviors – rude, disrespectful, no communication - patient

Relationship Preceptor/Student

10. When I looked at the factors you mentioned I noticed the majority of them related to relationships, whether that is with patients or preceptors. You stated that having a good personality dynamic allows you to get to know a person and help establish a relationship. After a relationship is established you feel comfortable with the preceptor or patient. Do you still agree? Why?

11. You then stated that after a comfort relationship is established more opportunities for engagement are provided. Do you agree?

12. You then elaborated that when more opportunities for engagement are present you are able to establish trust which results in more opportunities for engagement. Do you agree?

13. Based on this it appears that a comfortable relationship leads to opportunities for engagement, which establish trust. This results in a continuous cycle of more opportunities for engagement. Do you agree? Why?
14. Do you need comfortable/trusting relationships with your preceptor and your patients for engagement in clinical education to occur?
   a. Is relationship more important than the other? If so, which one?

15. If a comfortable/trusting preceptor/student relationship a factor that could promote or hinder engagement in clinical education? Why?
   a. Probe: Do you have to have this type preceptor/student relationship to be engaged in clinical education? Why?

Role of Engagement
16. You defined the role of engagement in clinical education as the application of knowledge to an authentic situation to promote learning. Do you still agree? Why?
   a. Does application include critical thinking?
   b. What is difference between the roles of engagement in classroom education vs. clinical education?

Observational Learning/Mediational Processing:
17. During observations there was a time I was in the athletic training room observing other participants, however I noticed that you were doing some things. Therefore, I recorded data since you had already provided consent. I would like to ask you some questions based on that observation.
   a. During this observation you performed an ankle evaluation on a patient after practice had ended. After you completed the evaluation you spoke to the patient. Your preceptor then came over and asked you what you thought was going on with the patient. Your preceptor then performed what appeared to be a “shorter” evaluation on the patient. Do you recall this experience?
      i. Was this experience engagement in clinical education? Why?
      ii. Was there any type of conversation that occurred after the patient evaluation? If so, what was it?

18. I am going to reference some hands-on skills, observations, and conversations I saw and using the scale rate your level of engagement:
   a. Everyday conversations with patients
   b. Everyday conversations with peers
   c. Observing patients performing exercises
   d. Observing your preceptor interacting with a patient
   e. Observing ATSA doing taping
   f. Watching practice
   g. Demonstrating or assisting patients with exercises
   h. Cleaning duties
   i. Applying game ready, Normatec, etc.
j. Stretching a patient
k. Taping a patient
l. Making and applying ice bags
m. Performing ankle evaluation on patient
n. Documentation
o. Reading doctor’s note
p. Informing or educating patients/ATSAs
q. Providing feedback to ATSAs
r. Conversations with your preceptor about documentation
s. Asking your preceptor questions
t. Asking your patient questions
u. Conversations with your preceptor about patient progress/status

19. ONLY ASK IF EVERYDAY CONVERSATIONS IS RATED USING SCALE – Why do you consider an everyday conversation to be contributing or engaging?

20. Do you feel engaged in clinical education when you are doing documentation? Describe what types of documentation would be considered engagement in clinical education.
   a. Probe: Examples of documentation would be SOAP notes, limitations, treatments, rehabilitation exercises

21. Do you feel engaged in clinical education when you are observing patients performing exercises? Why?

22. Do you feel engaged in clinical education when observing practice? Why?

23. What do you think the difference is between experiences you identified as contributing to those that you identified as engaged? Why?
   a. Probes: Your potential differences could be: thinking vs. critical thinking, assisting vs. autonomy

24. Out of the examples I provided which experience would you say you were the most engaged? Why? Least engaged? Why?

25. During observations I noticed you took a lot of initiative. Why?

Additional Questions:

26. I noticed that your preceptor allowed for you to do a lot of things on your own, which would be defined as supervised autonomy. Why do you think your preceptor allows this?
   a. How does this make you feel?
27. Based off of the conversation today do you still define engagement as you initially did? Why or why not?

28. Based off of the conversation today do you still define the role of engagement as you initially did? Why or why not?

29. If you had to select 1 factor that would promote engagement the most what would they be? Why?

30. If you had to select 1 factor that would hinder engagement the most what would they be? Why?

31. Do you think your preceptor trusts you? Why?
APPENDIX E

EXAMPLE OF PRECEPTOR FOLLOW-UP INTERVIEW PROTOCOL
Appendix E

Example of Preceptor Follow-Up Interview Protocol

Interviewer: ____________________________________________________________

Interviewee: ____________________________________________________________

Institution: ________________________________________  Date: ____________

Start Time of Interview: ______________ End Time of Interview: ______________

Context of Interview: _____________________________________________________

Introduction:

2. State your name.

Initial Interview Questions:

Engagement Definition

3. When defining engagement in clinical education you stated it is being active in learning. You described active as being physical and verbal, where physical is performing a hands-on skill and verbal is asking questions. What is it about the physical and verbal that makes or defines engagement? Why?
   a. Probe: What do you mean by active?

4. Later on in your interview when describing what engagement in clinical education looks like you stated engagement involves applying knowledge and critical thinking. Is that what you mean by active? Is “active” application and critical thinking? Why?

Engagement Description

5. When you described what engagement looks likes in clinical education you stated engagement occurs through observations, hands-on skills, and discussion. In addition, when describing how you would teach your student to apply a modality your description included all of these aspects. Do you still agree that engagement in clinical education happens through these types of experiences? Why?

6. When describing hands-on skills you stated hands-on skills include application and critical thinking. Do you still agree? Why?
a. If hands-on skills need to include application and critical thinking to be a form of engagement in clinical education does this need to be a component of observations?

7. When describing discussion, you stated it involves asking questions and is collaborative, meaning both sides are equality contributing to the conversation. Do you still agree with this interpretation? If so, does discussion need to have those traits in order be considering engagement in clinical education? Why or why not?
   b. You did mention application and critical thinking as component of hands-on skills. Therefore, does discussion need application and critical thinking to be a form of engagement in clinical education?

8. Are there any other forms of conversation that you would describe as a form of engagement in clinical education? If so, describe what those conversations would look like.
   a. Probe: During observations I witnessed you explaining things to the student, providing feedback to the student or patient, and asking rhetorical questions. Would any of these be conversations that are not classified as discussion?

9. If I gave you 2 words, dialogue & discussion, how would you define each term?
   a. Probe: How would you define purposeful dialogue?

10. When you were describing the forms of engagement in clinical education. You stated there are different “levels” of engagement.” Therefore, do you see engagement as a scale/spectrum? If so, describe what that scale looks like.
    a. Probe: I provided you an example of filling up a water bottle and you stated that would be on the lower, while doing rehabilitation with a patient would be on the higher end.
    b. Probe: Are the forms of engagement on the spectrum? Is application or critical thinking on the spectrum?

Factors
11. When you described factors that promote or hinder engagement the majority of them involved the student or preceptor behaviors.
   a. Promote:
      i. Personal – foundational knowledge – student
      ii. Personal – values being a preceptor - preceptor
      iii. Behavior – understanding student’s academic level – preceptor
      iv. Behavior – initiative – preceptor
   b. Hinder:
      i. Personal – shy, quiet – student
      ii. Personal – foundational knowledge – student
      iii. Behaviors – do not want to work with student - patients
iv. Behaviors – not understanding student’s academic level – preceptor
v. Behavior – lack of initiative – preceptor

12. During the interview it appeared you enjoy/value being a preceptor. In addition, I witnessed behaviors during observations that demonstrated this. Do you enjoy/value being a preceptor? Why?
   a. Do you think this promotes/hinders engagement in clinical education? Why?

Relationship Preceptor/Student

13. When I reviewed your factors holistically it was evident that a majority of them related to the preceptor/student relationship. In addition, during the interview we spent time discussing the preceptor/student relationship. You stated having a personality dynamic where the preceptor and student get a long is important. You also stated that engaging in personal conversations about everyday life allows you to get to know the student better. Through these conversations you are able to identify situations that student can handle. And you use this information to provide students with experiences that will help them develop. Based on this it appears that the preceptor/student relationship could be a factor that promotes or hinders engagement in clinical education. Do you agree? Why?

14. You also discussed confidence. You stated when a student demonstrates competence that makes you confident in the student’s abilities. You then stated that if a preceptor is confident in the student then the student becomes confident in himself or herself. Do you still agree? Why?

15. You also referenced that trust is established when a preceptor is confident in the student. Based on your description of confidence would you say that when a student demonstrates competence it establishes trust? Do you still agree? Why?
   a. You then elaborated and said when trust is established you provide the student with more or higher quality opportunities, which result in higher quality engagement. Do you still agree? Why?
   b. Based on this do you see engagement as a scale/spectrum? If so, describe what that scale looks like.

16. Could trust be a factor that promotes or hinders engagement in clinical education? Why?
   a. Probe: What if trust was not present would there be no engagement in clinical education?

Role of Engagement

17. You defined the role of engagement in clinical education as the merging of didactic and clinical education through application. Do you still agree? Why?
a. What do you mean by application?
b. What happens after a student applies something? What is the outcome?
c. Does merging only include didactic knowledge? Does it include knowledge from other areas?

Observational Learning/Mediational Processing:

18. When I asked you questions after the first observation you stated student education was one of the main reasons you did the things I was inquiring about. Based on this it appears you enjoy/value being a preceptor. Do you agree? Why?

19. Based on observations it appears that you and your student have a good/comfortable/positive preceptor/student relationship. Do you agree? Why?
   a. Could this be a factor that promotes or hinders engagement in clinical education? Why?

20. During observations I was able to observe two different times of day, morning and afternoon. It appeared that the morning was an older patient demographic and a lot slower, while the afternoon was younger patients and a lot busier. Do you agree?
   a. Could the times of day be a factor that promotes or hinders engagement in clinical education? Why?

21. During observations I witnessed supervised autonomy. Based on this I assume that you have established trust with your student. Is that correct? Why?

22. Do you think the presence of the preceptor increases or decreased engagement in clinical education?

Additional Questions:

23. Based off of the conversation today do you still define engagement as you initially did? Why or why not?

24. Based off of the conversation today do you still define the role of engagement as you initially did? Why or why not?

25. If you had to select 1 factor that would promote engagement the most what would they be? Why?

26. If you had to select 1 factor that would hinder engagement the most what would they be? Why?

27. Do you trust your students? Why?
REFERENCES
REFERENCES


Commission on Accreditation of Athletic Training Education. (2016). *Standards for the accreditation of professional athletic training programs.* Austin, TX: Author.


student’s perceptions of learning environment, student learning and performance.


