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Investigating Post-Graduate Athletic Training Education Student Perceptions Following A Purposefully-Implemented Peer-Assisted Learning Pedagogy

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INVESTIGATING POST-GRADUATE ATHLETIC TRAINING EDUCATION

STUDENT PERCEPTIONS FOLLOWING A PURPOSEFULLY-IMPLEMENTED

PEER-ASSISTED LEARNING PEDAGOGY

Dana Bates

A DISSERTATION

Presented to the Faculty of

The Graduate College of the University of Nebraska

In Partial Fulfillment of the Requirements

For the Degree of Doctor of Philosophy

Major: Educational Studies

(Educational Leadership & Higher Education)

Under the Supervision of Professor James O'Hanlon

Lincoln, Nebraska

November, 2012

INVESTIGATING POST-GRADUATE ATHLETIC TRAINING EDUCATION

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PEER-ASSISTED LEARNING PEDAGOGY

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University of Nebraska, 2012

Adviser: James O'Hanlon

The purpose of this qualitative study was to investigate graduates' perceptions of a purposefully-implemented Peer-Assisted Learning (PAL) pedagogy in their undergraduate athletic training education and the impact of that experience in their first job post-graduation. This was the first research in athletic training education that investigated how PAL impacted the students once they were practicing as athletic trainers. Previous research had investigated prevalence, benefits and athletic training student preference for PAL, however, no research had researched its impact on the graduate. Through one-on-one phone interviews with thirteen 2010 and 2011 graduates the researched aimed to investigate through the graduates perceptions how PAL impacted their transition to entry-level professional.

The researcher analyzed this data through a qualitative process and found themes that included improved communication skills, teaching skills, improved clinical reasoning, improved confidence, socialization, and gained a deeper understanding of athletic training content which led to their success on the Board of Certification exam. These findings are significant in athletic training education as program directors investigate teaching methods that can assist students to be critically thinking athletic trainers.

Future research should continue to investigate pedagogies that can impact athletic training students with teaching skills as well as success on the Board of Certification exam.

Acknowledgements

This was a long and bumpy path to the end of the road as I've completed another step in this journey of life. As I've completed this dissertation and as many before me can attest, it couldn't have been done without patience, persistence and God's hand through which I accomplished this milestone. I can't thank enough all the people that have assisted in this accomplishment.

I am deeply grateful for all the support that I received from my entire family. For my husband John, who supported me in taking the first and last steps toward completing this dissertation. I was blessed with the support from my extended family and assistance from my mother with revisions of my many drafts.

I can't thank my advisor, Dr. James O'Hanlon, enough regarding all his support, encouragement, advice and guidance throughout the process. I appreciate your dedication to me and ensuring that I learned throughout the entire process. You had many demands throughout my five years, and you constantly supported me through my research.

A special thanks to Dr. Jeff Rudy and Dr. Ron Joekel for serving as my readers and committee members. Thank you also to Dr. Jody Isernhagen for her commitment to serving on my committee and her valuable feedback on revisions. The entire committee was very helpful and I benefited from the entire experience and know I've grown as a researcher.

Thank you to all those that participated, I could not have completed it without your time and support. Thanks to my colleagues who supported and encouraged me to the end.

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Chapter 1

Introduction

Statement of the Problem

Clinical education within athletic training, as defined by the Commission on

Accreditation of Athletic Training, is the "application of knowledge and skills learned in

classroom and laboratory settings to actual practice on patients under the supervision of

an Approved Clinical Instructor or Clinical Instructor" (NATA, n.d.). The goal in

clinical education is for the athletic training student to acquire technical skills, develop

professional responsibility, and move from dependent supervised practice to independent,

collaborative practices (Iwasiw & Goldenberg, 1993). In athletic training education the

question of how to move students from paper and pencil concrete thoughts to more

independent clinical application has been an ongoing topic among athletic training

education administrators. Many programs graduate well-prepared athletic trainers who

have a knowledge base that far surpasses what graduates knew 20 years ago. This is due,

in part, to the changes in athletic training education and professional responsibilities of

athletic trainers. The investigator has seen athletic training education change over the last

10 years developing into new educational requirements which are due to the Commission

on Accreditation of Athletic Training Education (CAATE) implementing a strict

competency-based curriculum that entails supervised clinical experiences. The reason for

these revisions is to graduate high-quality allied health care professionals. However,

anecdotal observation and research (Curtis, Helion, & Domshon, 1998) have

demonstrated that across the board athletic training education is varied. Some athletic

training educators and employers have concerns that not all graduates are well equipped

with personal and practical skills necessary to confidently practice as entry-level athletic

trainers (Massie, Strang, & Ward, 2009).

The topic of transitioning the students into entry-level athletic trainers who apply

newly-learned knowledge with patients has been addressed by Geisler and Lazenby

(2009), Tanner (2005), and Knight (2008). These authors have suggested that students

need to move to become critical thinking allied health care providers and then go beyond

the steps of critical thinking to clinically thinking and clinically reasoning providers.

Tanner (2005) defines critical thinking as "the demonstration of the capability to analyze

assumptions, challenge the status quo, recognize limitations in health care, and take

action to improve it" (p. 48). He then goes on to define clinical thinking as

> involving skills that may be unrelated to critical thinking . . . skills of clinical
> judgment and decision making, and they require solid theoretical knowledge and
> the ability to notice clinical signs, interpret observations, respond appropriately,
> and reflect on actions taken. (p. 48)

Geisler and Lazenby (2009) state that clinical reasoning is athletic trainers "making

multiple decisions based on myriad dimensions of knowledge and skill sets, the skillful

gathering of subjective and objective data, complex interactions with the patient, family

members and other providers, and real-time problem solving" (p. 55). Knight (2008)

speaks about critical thinking being at the heart of programs pedagogical and practical

purposes. Knight then defines clinical thinking as the way to "bridge the gap of

classroom knowledge and practical application . . . thereby helping students become

knowledgeable, confident, critical thinking professionals" (p. 81). Thus, athletic training

education administrators may need to introduce a more specialized or discipline specific

mode of reasoning and thinking beyond generic critical thinking. This may move a

student toward an entry-level professional who uses clinical reasoning in selecting a treatment plan for patients.

Presently athletic training programs are implementing a pedagogy that is tailored toward clinical thinking with the goal of moving a student from an athletic training student (who is under constant supervision) to an entry-level clinical thinking athletic training professional. Students learn well from physically performing an activity and teaching. One strategy that has been extensively studied and has demonstrated evidence of its benefits in clinical education is Peer-Assisted Learning (PAL). This strategy has been developed from Bandura's social learning theory that involves a continuous reciprocal interaction among cognitive, behavioral, and environmental influences. Bandura (1977) stated that virtually all learning phenomena resulting from direct experience can occur on a vicarious basis by observing other people's behavior and its consequences. This results in a form of modeling. Within clinical education, students can learn through modeling and teaching. This can take place from the instructors as well as from their peers. Learning from peers has been called peer education, peer learning, peer tutoring, peer teaching and PAL. With PAL, students from similar social groupings learn and teach together. PAL involves upperclassman assisting and teaching their peers from content and knowledge they have acquired through previous course work. Topping and Ehly (1998) defined PAL as "people from similar social groupings, who are not professional teachers, helping each other to learn and by so doing, learning themselves" (p. 1). Henning, Weidner, and Jones (2006) defined PAL in the context of athletic training as the "process of gaining knowledge, understanding, or skill in athletic training-related tasks among students who are at either different or equivalent academic or

experiential levels through instruction or experience" (p. 102). PAL as a pedagogical tool may be able to assist in transitioning athletic training students to entry-level professionals who critically and clinically think.

PAL is an interactive learning strategy that can promote application of clinical thinking skills in the clinical setting (Yates, Cunningham, Moyle, & Wollin, 1997). Within PAL, the emphasis of upper-level students teaching peers, or learning "by teaching" distinguishes it from other group activity that incorporates cooperative learning. Examples of cooperative learning that are not under the PAL umbrella are students acting as a model or simulated patients for assessment of skills or a student presentation of his/her work.

Peer mentoring is also different than PAL. Peer mentoring involves a peer offering support in an emotional support role, whereas, PAL is a peer establishing a teaching role. This requires the peer-tutor to recall and remember techniques and skills, therefore, creating learning experiences for both the peer-tutor and peer-student. They are equal active partners in this learning environment. Within PAL, the student who teaches gains a deeper understanding regarding their clinical skill or subject matter being taught. The peer-tutor also learns to improve communication skills and increases self-confidence.

An example of PAL in the clinical educational setting would be a senior-level athletic training student teaching and mentoring a sophomore-level athletic training student in sophomore-level clinical proficiencies. Traditionally, a sophomore-level athletic training student would be working on acute care proficiencies. Therefore, a senior-level student could work through acute care scenarios with a sophomore student

providing a high level of comfort for both of them since this is peer directed. This experience provides the senior-level student with another avenue of learning through teaching. The senior student is reinforcing his/her learning while assisting the sophomore-level student in acute care proficiencies.

PAL has been widely implemented in education as well as in medical health fields of dentistry, nursing, occupational therapy, and physical therapy (Henning et al., 2006). The proven benefits of PAL have included: increased confidence in performing skills, decreased anxiety or stress when working with peers rather than clinical instructors, increased self-esteem, increased confidence, increased communication skills, improved test scores and course performance, increased critical thinking, enhanced learning of the material, and improved organizational skills (Buckley & Zamora, 2007; Burke, Fayaz, Graham, Matthew, & Field, 2007; Cason, Cason, & Bartnuck, 1977; Field, Burke, McAllister, & Lloyd, 2007; Glynn, MacFarlane, Kelly, Cantillon, & Murphy, 2006; Heckmann et al., 2008; Henning, Weidner, & Marty, 2008; Henning et al., 2006; Iwasiw & Goldenberg, 1993; Kurtz, Constance, & Alverson, 2010; Mackey, 2007; Mackey, Kamphoff, & Armstrong, 2010; Nikendei, Kohl-Hackert, & Junger, 2008; O'Moore & Baldock, 2007; Orsmond, Merry, & Reiling, 2000; Secomb, 2007; Stevens & Brenner, 2009; Topping, 1998; Weidner & Popp, 2007; Weyrich et al., 2009, Weyrich, Schrauth, & Nikendei, 2008). PAL also goes beyond examination scores. It has shown benefits toward satisfaction in courses through establishment of a reciprocal social support system (Fantuzzo, Dimeff, & Fox, 1989), psychological support as well as professional development (Escovitz, 1990), and creating positive role models amongst peers (Parr & Townsend, 2002). PAL has been documented as a very useful pedagogy within many

allied health professions; however, the effects of PAL have not been investigated relative to the development of post-graduate athletic trainers.

Purpose Statement

The purpose of this qualitative study was to investigate graduates' perceptions of a purposefully-implemented PAL pedagogy in their undergraduate athletic training education and the impact of that experience in their first job post-graduation.

Research Questions

The following question was studied: How did graduates of a purposefully-implemented PAL pedagogy perceive that this pedagogy influenced their transition from athletic training student to performance as an entry-level athletic trainer?

Definition of Terminology

Approved Clinical Instructor (ACI) or Clinical Instructor (CI)—a credentialed health care professional who provides instruction and supervision to athletic training students within clinical educational experiences.

Athletic Training Education Program (ATEP)—a nationally accredited program through the Commission on Accreditation of Athletic Training Education (CAATE). To become a certified athletic trainer a student must qualify and successfully pass a Board of Certification (BOC) exam. This qualification is dependent on the student graduating from an ATEP that is CAATE accredited.

Athletic Training Student—a student who is formally enrolled in an accredited Athletic Training Education Program.

Certified Athletic Trainer—a health care professional who collaborates with physicians to optimize activity and participation of patients and clients.

Clinical Educational Experiences—experiences where an athletic training student practices and integrates their classroom learned skills on patients under the direct supervision of an ACI or CI.

Peer-Assisted Learning—defined for this study as athletic training students, who are not professionally trained teachers, helping each other learn and by so doing, learning themselves. PAL is the process of using student instruction to gain knowledge, understanding, and skill in athletic training-related tasks among students who are at different academic or experiential levels.

Peer-student—a student being taught by a higher academic level peer-tutor.

Peer-tutor—a student who is utilizing PAL to teach, instruct or demonstrate a learned skill to a peer-student at a lower academic level.

Purposefully-Implemented PAL pedagogy—this pedagogy involves students who are required to be involved in a PAL curriculum in which they serve as peer-tutors as well as a peer-students through their educational experiences.

Assumptions

The underlying assumption of the study was that the athletic training programs continued to implement the designed PAL curriculum throughout the students' educational experiences. It was also assumed that all participants were directly involved and had a role within the PAL pedagogy of the program's curriculum and clinical educational experiences.

Delimitations

Delimitation to this study was that participants gave responses that were true reflections of personal experiences in PAL pedagogy.

Limitations

A limitation to this study was that participants graduated from different Athletic Training Education Programs with differing PAL requirements, instruction, and teaching techniques. Additionally, students from various programs may have differing experiences that ultimately determines how this pedagogy impacts them post-graduation.

Another limitation to this study was due to the interpretive nature of qualitative research, the researcher could introduce bias into the analysis and findings of this study.

Significance of the Study

PAL has become widely recognized in education as well as in medical health fields of dentistry, nursing, occupational therapy, and physical therapy as an effective teaching approach. Benefits of implementing PAL within the curriculum include increased confidence in performing skills; decreased anxiety or stress when working with peers rather than clinical instructors; increased self-esteem, confidence and communication skills; improved test scores and course performance, increased critical thinking, enhanced learning of the material, and improved organizational skills (Buckley & Zamora, 2007; Burke et al., 2007; Cason et al., 1977; Field et al., 2007; Glynn et al., 2006; Heckmann et al., 2008; Henning et al., 2006; Henning, et al., 2008; Iwasiw & Goldenberg, 1993; Kurtz et al., 2010; Mackey, 2007; Mackey et al., 2010; Nikendei et al., 2008; O'Moore & Baldock, 2007; Orsmond et al., 2000; Secomb, 2007; Stevens & Brenner, 2009; Topping, 1998; Weidner & Popp, 2007; Weyrich et al., 2009, Weyrich, Schrauth, & Nikendei, 2008). Although PAL has been documented as a useful pedagogy in many allied health professions for numerous reasons, little is known and researched about PAL in athletic training education and the effects on post-graduates. The study

reported here contributed to the research regarding PAL in athletic training education and

explored how PAL impacted students after graduation. Results of this may demonstrate

to athletic training education administrators whether there is a need for implementation of

this type of pedagogy in clinical education.

Chapter 2

Literature Review

The review of literature examined peer-assisted learning (PAL) as an educational pedagogy. Through the review of literature, one will become familiar with the definition of PAL, perceived benefits of PAL, implementation strategies and conclude with research about PAL in athletic training. The goal of this literature review was to provide a framework for PAL in athletic training education.

What is Peer-Assisted Learning?

Learning is a process of acquiring knowledge and skill through study, experience, or teaching. Athletic training has often been taught through learning by doing. In an athletic training student's clinical education, they often learn through modeling and teaching. This can take place in the guidance of instructors as well as from their peers. When this instruction and modeling occurs through the students it has been called peer-mentoring or peer-tutoring. Topping (1996) states that PAL is the acquisition of knowledge and skill through active helping and supporting among students at or of different academic levels. PAL has similar underpinnings to learning through experience; however, when looking at the student serving as a peer-tutor, it is often promoted on the ground that, for the peer-tutors, it is "learning by teaching" (Topping, 1996, p. 12). PAL, as defined in the context of athletic training, is athletic training students, who are not professionally trained teachers, helping each other to learn and by so doing, learning themselves. PAL is the process of gaining knowledge, understanding, or skill in athletic training-related tasks among students who are at different academic or experiential levels through instruction or experience. A peer-tutor was that student who

taught, instructed, or demonstrated a learned skill to a student at a lower academic level. A peer-student was taught by the peer-tutor. The peer-student was of a lower academic level than the peer-tutor.

Benefits of Peer-Assisted Learning

There have been numerous studies investigating the possible benefits of PAL in allied health fields both for the peer-student as well as the peer-tutor. Researchers within nursing journals have discussed PAL in clinical education as early as 1977 when Cason et al. (1977) conducted a qualitative case study on peer instruction in nursing education. They found that peer instructional method was superior to the traditional methods of teaching and that instruction, patient care, and education skills improved with PAL implementation in nursing. The following section will address the benefits that have been found through research regarding PAL in allied health fields.

Iwasiw and Goldenberg (1993) evaluated PAL in clinical learning. The authors investigated the effects of PAL on nursing students to see if they achieved significantly higher improvement scores and if the students preferred peer teaching, had no preferences between peer teaching versus traditional teacher instruction, or preferred the traditional teacher instruction exclusively. The authors conducted a pre-post experimental design with 50 students, one group received peer teaching while the other group received instructor teaching. Data were collected from a pre- and post-psychomotor and cognitive tests of a surgical dressing procedure as well as from a Clinical Teaching Preference Questionnaire (CTPQ). They concluded that those students taught by their peers demonstrated cognitive and psychomotor scores that were

significantly higher and the CTPQ showed that these students had a preference for peer instruction.

Weyrich et al. (2009) conducted a prospective, randomized trial to evaluate if PAL was effective in technical skills training in a skills laboratory setting, and if PAL was as effective as faculty staff-led training. They utilized 89 medical students to participate in one of three experimental groups: a PAL group in which skills lab training was assisted by senior-student tutors; a faculty-led training group in which training was assisted by consultants in internal medicine with experience as skills lab teachers; or a control group in which no skills lab training took place. The groups were assessed utilizing an Objective Structured Clinical Examination (OSCE developed in the 1970's by Harden) and were video recorded. The OSCE evaluation consisted of three different stations for injection techniques. The authors did consider confounding variables of previous education or experiences within this skill task and found no significant difference in these variables among the three study groups. Within the OSCE for the PAL group and faculty-led group, scores were significantly higher than the control group. There was no significant difference between the PAL and faculty-led groups. The authors were able to conclude, within a skills laboratory setting, PAL is a successful method of learning and that it can be just as effective as faculty-led training.

Field et al. (2007) also looked at clinical exam skills and PAL to determine whether PAL can enhance clinical examination skills training in medical students. They included 86 volunteers in the study which was not random and had no control group. Students were in a course that had peer-tutors for examination techniques. The peer-tutors were given some formal training prior to becoming peer-tutors. Data were

collected through a questionnaire that the students completed after the PAL skill training. It was determined that students who experienced the PAL class perceived the session as well structured and of high quality. It was also determined the peer-tutors improved their techniques over time. Students also reported higher confidence after training. The study demonstrates the benefits of PAL and the possibility that formal instruction of the peer-tutors may be beneficial for quality tutor sessions within a laboratory setting.

Another study conducted in neurology investigated efficacy of PAL in clinical skills training from peer-tutors as compared to postgraduate clinical tutors (Heckmann et al., 2008). A randomized control study was conducted and an assessment of each student's practical skills and knowledge on a written exam as well as Objective Structured Clinical Examination (OSCE). The experimental group received their skill training by peer-tutors while the control group was taught by postgraduate tutors. Results found that students participating in the peer-tutor group scored slightly higher as compared to the control group on both the written test and on the OSCE when compared to the students trained by the postgraduate clinical staff. This supports previous research.

Burke et al. (2007) conducted a study that utilized four senior-level students who were PAL trained to provide training sessions. These sessions involved a task within a musculoskeletal system examination. The authors evaluated the trainees with a pre/post confidence questionnaire, a course experience questionnaire and reviewed end-of-year Objective Structured Clinical Examination (OSCE) scores. The study found that PAL was a useful adjunct in teaching musculoskeletal exams. Students who were instructed through PAL techniques stated that they benefitted from this technique with emphasis on communication skills. The data collected on the end-of-year OSCE found that 93% of

the PAL-training students passed the musculoskeletal system examination as compared to 67% of those participating in the traditional curriculum. Additional research supporting PAL enhancing clinical skills was conducted by Nikendei et al. (2008), Weyrich, Schrauth, and Nikendei (2008), and Henning et al. (2008).

Similar findings regarding improved confidence from a PAL curriculum were found in a study conducted by Yates et al. (1997). These authors implemented a peer-mentoring program in a first year nursing program. The program was implemented due to feedback from staff and students suggesting that students often felt a lack of confidence commencing their clinical experience. The authors implemented a PAL curriculum in which second year nursing students served as peer-tutors to first year students during five group sessions attended on a voluntary basis. The focus of the group sessions was preparing first year students for clinical practice, developing strategies for achieving learning outcomes and promoting reflective learning. After the session, students completed a questionnaire as well as focus group interviews. Results from this study found that students felt less anxious and experiences increased confidence following the peer-mentoring. This study demonstrates further evidence that a PAL curriculum can improve confidence as well as decrease anxiety when peers work with one another in the educational exchange.

Kurtz et al. (2010) developed an assignment in their nursing curriculum which was labeled as the "Master Student Presenter." Through this teaching assignment the students teach peers a fundamental skill in a simulation laboratory. The assignment requires the students to synthesize current literature to establish an evidence-based practice, deliver an oral presentation, demonstrate a skill to fellow students and evaluate

peers on skill performance. Each student has a required meeting with the instructor prior to delivery of the oral presentation to answer any questions they may have. Through a Master Student Presentation: *Roles of the Professional Nurse Survey,* the authors determined the majority of students indicated that presenting a learned skill to their peers helped them develop the role of caregiver and increased their confidence within their skills. This project provides evidence that PAL increases the confidence, as well as competence of the student teacher.

A study conducted by Nikendei et al. (2008) investigated student perceptions of a purposefully-implemented PAL curriculum to medical students. The authors recruited upperclassman to serve as peer-tutors. The upperclassmen were trained by experienced clinicians to prepare them for their peer-tutoring and the PAL sessions took place in the clinical education component of the underclassman. The study had a control group which compared post-intervention training on the ward with peer-tutors to a control group who were instructed with patient centered tutorials. The authors evaluated the curriculum through post-session surveys. They found that through the PAL sessions students reported greater learning effects, a feeling of being more integrated on the ward, and significantly less anxiety concerning on-ward work as a medical doctor.

A study that demonstrates how PAL can assist students in improving critical thinking and competence was conducted by Annis (1983).   The study compared three groups of students: one group that only read material to be studied, one group that read the material with the expectation of having to teach the material to a peer, and a third group that read the material with the expectation of teaching it and then actually being involved in teaching to a peer.   The students then completed a 48 item test of both

specific and general competence. The author found that the read-only group gained less than the read with expectation to teach group, which in turn gained less than the read-and-teach and involved with teaching a peer. These results were also replicated in a study by Benware and Deci (1984) with similar findings. These two studies demonstrate that PAL can result in higher order conceptual understanding.

A study conducted by Glynn et al. (2006) investigated PAL implementation in medical education. Their program implemented a PAL pedagogy utilizing upperclassman as peer-tutors for a module on communication skills and role-play session for medical undergraduates. The peer-tutors were volunteers and had completed a three hour preparatory workshop on how to run a small group, give feedback and conduct a role-play scenario. The peer-tutors conducted the role-play sessions and at the conclusion data were collected through semi-structured interviews and focus groups to establish the views of peer learners and tutors towards this method of instruction. The authors found three common themes that emerged from their interviews and focus groups. The three common themes were learning environment, educational exchange, and communication and modeling. In the educational exchange, students should feel that the learning environment is safe. Through this PAL pedagogy, it was found that both the tutors and learners felt the small group work was a safe learning environment and they felt comfortable being able to express ideas. Modeling was also found as students exchanged information and gave feedback through PAL. This modeling and serving as a tutor can be very useful in enhancing academic performance for lower achieving students as demonstrated in a study conducted by Annis (1983).

Buckley and Zamora (2007) investigated the effects of a PAL program on the tutors. Volunteer tutors went through a training session which also involved support and assistance from medical school staff. Small group sessions, led by the peer-tutors, instructed underclassman by reviewing examination procedures of particular body systems. After the program the tutors completed a questionnaire exploring their motivation for being tutors, views of teachers and teaching, previous teaching experience and long-term career aspirations. It was found that a student's choice to volunteer as a peer-tutor was due to their desire to improve their own teaching ability as well as their skills. The participants stated that serving as a peer-tutor enhanced their skills for practical teaching, confidence with speaking to groups and communication skills.

Peer feedback regarding PAL has been very positive. Only a few studies have discussed conflicts with PAL. Peer limitation was found in the study conducted by Mackey et al. (2010) in which they investigated students' perceptions, values, and experiences in PAL. The authors conducted a Grounded theory study interviewing nine students and six approved clinical instructors. Through the study it was determined that students saw limitations with PAL which included the peers' lack of knowledge, over confidence in their knowledge, a lack of maturity, inability to teach the material and unwillingness to participate in the PAL process. In contrast to Mackey et al. (2010) findings, Weyrich, Schrauth, and Nikendei (2008) found that peer-guided activity to be sufficient in skill-lab training and their PAL program was rated very highly by the learners. Weyrich, Schrauth, and Nikendei (2008) also concluded that PAL is equally as effective as faculty or staff led training sessions. The differing results may be contributed to the amount of training peers receive for their tutoring responsibilities. Mackey et al.

(2010) did not have any PAL training for the students while students in Weyrich, Schrauth, and Nikendei's (2008) program were given a detailed manual and training by experienced clinicians. Although Mackey et al. (2010) found negative findings with the implementation of PAL, no other studies have demonstrated poor results or feedback regarding this pedagogy.

PAL, as demonstrated through research in allied health fields, can be a very useful tool in clinical education. The research indicates that PAL:

- effectively improves cognitive and psychomotor tasks as shown in skills labs or written exam scores (Burke et al., 2007; Heckmann et al., 2008; Iwasiw & Goldenberg, 1993; Nikendei et al., 2008);

- enables tutors to develop a higher order conceptual understanding (Annis, 1983; Benware & Deci, 1984);

- increases confidence, as well as decreasing anxiety in performing clinical skills (Buckley & Zamora, 2007; Field et al., 2007; Kurtz et al., 2010; Yates et al., 1997);

- helps develop roles as caregivers and students are more integrated into their clinical education (Kurtz et al., 2010; Nikendei et al., 2008);

- produces improved patient and educational skills (Cason et al., 1977);

- improves the learning environment; educational exchange is improved (Glynn et al., 2006); and

- can be just as effective as faculty led skills labs and review sessions (Weyrich et al., 2009).

The underlying premise of PAL is that the student who teaches a peer gains a deeper understanding in the content or clinical skills. It has also been demonstrated that through PAL, both the peer-tutor and peer-student actively learn in educational exchange.

Implementation Framework for Peer-Assisted Learning

A recent interest in PAL for medical students has come as a result of the United Kingdom's General Medical Council (GMC) statement that medical graduates must "be able to demonstrate appropriate teaching skills" (GMC, 2003). Many medical schools are beginning to push for implementation of PAL in their curriculum (Burke et al., 2007; Ross & Cameron, 2007; Stevens & Brenner, 2009; Weyrich, Schrauth, & Nikendei, 2008). PAL can be intentionally implemented through the student's clinical education or it can occur incidentally. As was demonstrated in the previous section detailing benefits of PAL, the current focus on PAL in allied health care fields has been investigating planned PAL curriculums. The following literature presents a framework of how to implement an intentional PAL pedagogy.

Ross and Cameron (2007) developed an implementation framework for PAL in medical schools. In part, this was a result of the General Medical Council recommendations. The framework includes 24 questions which a Program Director and planning group can use to assist the development of a PAL program. The authors note that many of the questions developed for the guide correspond directly to works within Topping's previous publications (Topping & Ehly, 1998). The questions are to help guide administrators with the development of a quality PAL program. The planning group can then formulate a proposal together for implementation of a PAL program.

From Ross and Cameron's (2007) publication, Nikendei et al. (2008) developed a practical model for application of PAL in medical schools. The authors discussed their cross-year peer-tutoring program at the Medical Hospital of the University of Heidelberg for medical students. The program modeled Ross and Cameron (2007) in which trained peer-tutors worked with a tutor manual and were supervised on a weekly basis by an experienced medical tutor. The peer-tutors were also given a financial allowance. Third year medical students were involved in this PAL program which included ten sessions with groups between three to eight participants. Overwhelmingly, the program was very well accepted. The peer-tutors benefited from increased basic clinical skills as well as enhancement of personal teaching skills. When their program was evaluated by a controlled study prior to implementation, the authors found the PAL group to have significantly greater learning, integrated better on the ward, and less anxiety concerning on-ward work as a medical doctor. Another study conducted by Weyrich, Schrauth, and Nikendei (2008) also supported the previous work that demonstrated peer-tutor training as a critical part for successful PAL programs. The authors also stressed close monitoring by experienced faculty and staff and continuous availability of a mentoring doctor.

Stevens and Brenner (2009) presented several practices to be included in developing PAL experiences for nursing students in their clinical education settings. The authors suggested using the following practices to help promote PAL into clinical education: emphasize the mentoring approach to move from concrete to relativistic and contextual thinking; incorporate learning strategies which encourage reflective student-to-student learning as a central component to clinical education; require student

preparation and participation in PAL in their clinical education; and provide guided interactive activities that foster collaborative learning. The model presented by Stevens and Brenner (2009) was put into practice with two nursing clinical groups in 2007 and 2008. The authors evaluated this PAL model compared to courses in 2007 and 2008 that didn't use this PAL model. The authors gathered information from the students' clinical course evaluation forms, a pre/post Critical Thinking Likert Scale and review of students' reflective journals. It was found that students rated the PAL course higher than courses without PAL. Through the pre/post Critical Thinking Likert Scale, students indicated greater gains in formulating a diagnosis, accurately reporting patient responses and a perceived substantial improvement in their motivation to learn. Lastly the reflective journals highlighted the benefits of PAL through collaborative association with peers.

Similar results were found regarding training of the peer-tutors by Weyrich, Schrauth, Kraus, et al. (2008). The authors found that the peer-tutors felt self-confident within their skills to instruct their peers after the skills training. It was also concluded that 82% of the peer-students felt that the peer-tutoring was satisfactory and the peers felt the peer-tutors were well prepared for their teaching activities. This study demonstrates that education and training of peer-tutors is important for positive outcomes both for the tutor and peer-students.

As seen through this literature review, an intentionally planned PAL curriculum with training and oversight by clinical instructors can benefit the peer-tutors and peer-students in this educational exchange within their clinical education experiences.

Peer-Assisted Learning in Athletic Training Education

Through antidotal observation and research by Curtis et al. (1998), the quality of athletic training education is varied among programs and some athletic training graduates may not be as well equipped with personal and practical skills necessary to confidently practice as an entry-level athletic trainer. As mentioned in the introduction, PAL is proposed as a way to transition the athletic training student to a graduate who may be able to reach clinical expertise. The following section will examine the current research related to PAL in athletic training education.

PAL has been researched widely in allied health fields; however it has been studied less in athletic training education. Several authors (Henning & Marty, 2008; Henning et al., 2006; Henning et al., 2008; Mackey et al., 2010; Marty, Henning, & Willse, 2010; Morris, 2008; Odell, 2010; Weidner & Popp, 2007) in athletic training education have studied PAL, however, further research is still needed regarding PAL in athletic training education.

Henning et al. (2006) conducted a study which described the prevalence of PAL in athletic training clinical education and identified students' perceptions of PAL. They sampled 138 entry-level athletic training students who were attending the National Athletic Trainers Association (NATA) annual meeting in 2002. These students were given an Athletic Training Peer-Assisted Learning Assessment Survey. This questionnaire addressed questions dealing with percentage of time devoted to PAL in their entry-level athletic training education. They found that 66% of participants practiced moderate to large amount of their clinical skills with other athletic training students. They also found that 60% of students reported that they felt less anxious

performing clinical skills on patients in front of their peers rather than in front of their

clinical instructors which supports previous research in PAL. The authors concluded that

PAL is occurring within clinical education of athletic training students, and further stated

that PAL should be implemented in athletic training curriculum.

Weidner and Popp (2007) assessed the effectiveness of intentional, formal PAL

on the performance of psychomotor skills and to again identify students' perceptions of

PAL. Henning et al. (2006) had previously investigated students' perceptions of PAL;

however they did not investigate effectiveness. Weidner and Popp (2007) utilized 51

subjects in an undergraduate upper extremity injury evaluation course who completed all

the requirements of the study. Within the course there were 27 athletic training majors

and 24 non-majors (these were exercise science or physical education majors). These

students were randomly assigned (stratified as either athletic training majors or non-

majors to ensure even distribution) to either an Approved Clinical Instructor (ACI) or the

peer-tutor review session group. They conducted a pretest and posttest of a psychomotor

skill within a hand and wrist evaluation. They also utilized an Athletic Training Peer-

Assisted Learning Assessment Survey which investigated perceptions of those students

assigned to the peer-tutor, and perceptions regarding benefits and preferences for PAL.

Results from this study demonstrated that both the ACI and peer-tutor review sessions

revealed differences between their pretest-posttest skill scores. However, through the

Athletic Training Peer-Assisted Learning Assessment Survey, they found that most of the

subjects (70.4%) within the peer-tutor group were less anxious when practicing

psychomotor skills as compared to practicing with their clinical instructors. They also

concluded through the survey that 44.4% of students within the peer-tutor group had

more self-confidence when practicing psychomotor skills with a peer-tutor. One can conclude from this study that PAL is as effective as ACI-led skill reviews in helping students to feel more confident and less anxious when practicing with a peer. However, the authors did not indicate if the peer-tutors had received any training regarding PAL prior to the inclusion within the study. As has been stated previously, it is important that peer-tutors receive some formal training regarding PAL for optimal outcomes for both tutor and peer.

A study conducted by Mackey et al. (2010) investigated the perceptions, values, and experiences of individuals involved in PAL in the clinical setting of an athletic training education program. The study was a qualitative investigation which involved nine athletic training students and six ACI's. In-depth, semi-structured interviews were completed and additional prompts were given if necessary through the interview process to allow for elaboration and further detail as necessary. The authors based the questions after their own personal experience as an ACI and the utilization of PAL as well as on Henning's (2006, 2008) research. Each interview was conducted by the principal investigator in a private office in a convenient location on the campus. The interviews were tape-recorded and data were analyzed inductively using Grounded theory of open coding and axial coding to develop themes. The author identified six main themes through the interview data:

- Defining PAL: all of the research participants gave similar descriptions of PAL within the educational exchange with one student stating that "peer assisted learning occurs when students of similar age or education help each

other work through the material to understand it better" (Mackey et al., 2010, p. 16).

- Role recognition: 10 of the 15 participants stated that the roles of serving as a peer learner or peer teacher evolved as the student progressed through the program. It was also found that all students participated as peer-students at some point during their educational exchange with peers.

- Preference for active informal learning: All of the research participants indicated that most of the educational exchange among peers involved active and/or collaborative learning that was informal in nature.

- Value of PAL: All of the students expressed that they believed PAL to be useful and beneficial. The benefits suggested by students through the interviews were increased knowledge, improved confidence, better communication skills, improved comfort level, stronger relationships with peers, decreased intimidation and anxiety, and increased transfer of learning from classroom and textbook information to real-life practice.

- Peer limitations: All participants described some of the peer limitations of PAL, however students stressed these limitations do not occur often. Limitations included peers' lack of knowledge, over confidence in knowledge, a lack of maturity, inability to teach the material, and unwillingness to participate in the PAL process.

- Recommendations related to PAL: All participants suggested their peer learning interactions while in the clinical setting were good and students gave suggestions for improving PAL activities such as incorporating informal PAL

activities more often in the clinical experience and encouraging ACIs to promote PAL more frequently.

Odell (2010) completed a mixed methods dissertation investigating the prevalence, utilization, effectiveness and benefits of formalized PAL in athletic training education as well as investigating passing rate of the BOC exam for programs that utilize PAL pedagogy. The author utilized a survey instrument submitted to Program Directors. Following the survey data collection the author conducted follow-up interviews with four Athletic Training Education Program directors in order to gather qualitative data to further explain PAL as a formalized pedagogy. It was found through this study that 45.7% of the survey participants felt that PAL was an effective teaching strategy while 10.9% saw PAL as a very effective teaching strategy. However, some of the survey participants did not utilize any formalized PAL pedagogy in their curriculum and several program directors were not willing to give feedback regarding passing rate of the BOC for their graduates. In conclusion the author stated that further research was needed to determine what teaching strategies were proving to be beneficial to athletic training students in regard to passing the BOC exam.

A dissertation by Morris (2008) looked at intentional PAL within athletic training didactic settings. The author specifically looked at student use of PAL, perceptions concerning PAL, and beliefs regarding the benefits of PAL toward their learning in the classroom and non-classroom setting. The author utilized a survey to gather data. It was found that students in both the classroom and non-classroom setting frequently use PAL. The students stated that they were undecided on perception of PAL; however, they

believed that PAL was beneficial toward their learning in both the classroom and non-classroom setting.

PAL can occur naturally but it must also be planned and intentionally implemented within the curriculum. Weidner and Popp (2007) and Morris (2008) were the first studies that investigated intentional PAL in athletic training education; however there was no formal instruction for the peer-tutors. As was found through several studies, intentional PAL does require some instruction for the peer-tutors (Burke et al., 2007; Field et al., 2007; Heckmann et al., 2008; Nikendei et al., 2008; Weyrich et al., 2009; Weyrich, Schrauth, & Nikendei, 2008). Weyrich, Schrauth, Kraus, et al. (2008) developed training sessions for their peer-tutors and they concluded that "sufficient tutor training and preparation is crucial for the success of peer teaching models" (p. 7). Peer-mentor training can take place early in the students' athletic training education. As has been demonstrated through the research in other allied health fields, when PAL is intentionally planned and implemented with PAL training sessions, both the tutor and peer may see benefits from this pedagogy.

One may question if students give accurate feedback about PAL pedagogy. A study conducted by Marty et al. (2010) investigated the accuracy and reliability of peer assessment of psychomotor skills in athletic training students. Their study involved students from an entry-level master's Athletic Training Education Program (ATEP) who were enrolled in an orthopedic assessment course. Data were collected on peers performing three athletic training psychomotor skills. These were recorded on different video segments and students had to verify if the task was correct or incorrect. Following the video the students completed a skill-assessment sheet. Results demonstrated that

students had a high percentage of correct scores, with an average of 96% accuracy. From this study it was determined that assessment of skills through peers does result in reliable and accurate evaluation.

If a program is planning on implementing an intentional PAL program, Ross and Cameron's (2007) 24 questions are a good starting point. A planning group can be involved in developing the first steps of a PAL program within the curriculum of an undergraduate athletic training education program. The athletic training education program faculty and staff must all be involved in the PAL program because even after its implementation, peer-tutors still need clinical supervision by an ACI or CI. PAL should be involved both within the didactic and clinical educational experiences.

Conclusion

As has been noted previously from other allied health care settings, clinical education is vital in the critical learning and application of knowledge. Strategies to improve the quality of clinical education need to go beyond just looking at the teaching, modeling and feedback from clinical instructors. This was supported by studies which intentionally implemented PAL along with tutoring of peers within their curriculum (Burke et al., 2007; Field et al., 2007; Heckmann et al., 2008; Nikendei et al., 2008; Weyrich et al., 2009; Weyrich, Schrauth, & Nikendei, 2008).

As has been demonstrated in this literature review, PAL does improve student perceptions of their overall clinical experience. It is a two-fold benefit of helping the one who is tutoring and the peer-student. Peer-tutors benefit from deepening their knowledge and practical competence in the field they are teaching. In addition the teaching appears to help improve self-esteem as well as communication skills. Peer-students benefit from

feeling more comfortable in practicing skills and techniques and less anxious as compared to working with their clinical instructors. Careful selection and training of the peer-tutor should be a part of an athletic training education PAL program. Education administrators must remember that PAL in a clinical experience does not replace the need for supervision by Approved Clinical Instructors and Clinical Instructors. The research literature suggests that PAL should be used as a supplement within the pedagogy of clinical educational experiences.

There is a need to further evaluate PAL in athletic training education. Current research has investigated prevalence and students' perception of PAL, effectiveness of PAL in psychomotor tasks, accuracy and reliability of PAL feedback, and benefits of this pedagogy. Post-graduate impact of PAL pedagogy needs to be studied. This research study investigating students' perceptions of PAL post-graduation will add to the current research and provide athletic training administrators data to help determine if a PAL pedagogy could assist students in their transition from athletic training student to clinically and critically thinking professional.

Chapter 3

Methods

This Chapter describes the research methodology, sampling method, instruments that were used for data collection, and procedures for collecting and analyzing data.

Research Question

The following question was studied: How do graduates of a purposefully-implemented PAL pedagogy perceive that this pedagogy influenced their transition from athletic training student to performance as an entry-level athletic trainer?

Research Design

Using qualitative designs of research, as stated by Creswell (2007), is to inquire into the meaning of individuals and allows research participants to be heard and tell their story. Denzin and Lincoln (2005) defined qualitative research as placing the observer in the world. Qualitative research

> consists of a set of interpretive, material practices that make the world visible. . . .
> They turn the world into a series of representations, including field notes,
> interviews, conversations, photographs, recordings, and memos to self… studies
> things in their natural setting. (Denzin & Lincoln, 2005, p. 3)

A qualitative research design was chosen for this study since the aim was to further understand, through a students' perspective, how a purposefully-implemented PAL pedagogy impacted them on their job post-graduation. A purposefully-implemented PAL is when students are required to be involved in a PAL curriculum in which they serve as peer-tutors as well as peer-students through their educational experiences. Qualitative research helped to keep "a focus on learning the meaning that the participants hold about the problem or issues, not the meaning that the researcher brings to the research or the writers from the literature" (Creswell, 2007, p. 39). For the research, one-on-one

interviews with graduates were conducted to allow them to express meaning about their individual transition from athletic training student who had a PAL curriculum to entry-level professional. A quantitative measure and statistical analysis would not have fit this study due to the research question and aim of investigating students' perspectives regarding PAL's impact on their job post-graduation. The one-on-one interviews were more appropriate than a survey design so students would give more open reflection and allow them to expand on questions asked which in turn led to a better understanding regarding the students' perceptions on how PAL influenced their transition to entry-level professional.

Qualitative research has not been utilized often in athletic training research. However, as athletic training program directors are trying to transition athletic training students to entry-level clinically thinking professionals, qualitative studies may be very influential. This study gave a better representation from the graduates' perspectives on their perceptions of PAL post-graduation. Therefore qualitative research gave a description and understanding with how PAL influenced the students' transition to entry-level professionals.

A phenomenology qualitative research method was used in this study. A phenomenological approach was appropriate since the investigator wished to explore the student experiences with PAL. A phenomenological approach investigates the lived experiences of the participants. This study aimed to further explore PAL and be able to describe the principle of the experience as perceived by the athletic training students in order to understand the "essence" of the practice of PAL as perceived by the participants (McMillan, 2011). The author used in-depth interviews to look at the various aspects of

PAL and investigate the students' perceptions of this pedagogy once they were practicing as an athletic trainer post-graduation.

Research Permission and Ethical Considerations

The interview protocol and consent form were reviewed and approved by the University of Nebraska at Lincoln Internal Review Board (IRB) in April of 2012. Permission for the study was requested in writing by the University of Nebraska at Lincoln IRB and was approved in June of 2012. This approval letter is found in Appendix B. Participants for this study were gathered through convenience sampling which is further detailed in the following section. An initial contact e-mail was sent to potential participants in May, 2012. This initial e-mail contact is found in Appendix C. Included in this initial e-mail were the investigator's contact information, the rights as a research participant, their right to withdraw from the study at any time, and the number to call at the University of Nebraska Lincoln Institutional Review Board. Potential participants were asked to forward their contact information to the investigator.

Programs and participants were left anonymous through assigning identification numbers. The identities of the athletic training education programs as well as the participants were kept confidential and names were not shared with other participants or individuals outside the research project. All hard copies of data were kept in a secured office in a locked file cabinet in the researcher's office. All data were kept on a password protected laptop computer.

Sampling

The population for this study was obtained through compiling all Athletic Training Education programs accredited by the Commission on Accreditation of Athletic

Training Education (CAATE). This was gathered from the CAATE website (www.caate.net) with a total of 354 programs. All athletic training education Program Directors were e-mailed in August of 2011. This e-mail inquired if they implemented an intentional PAL pedagogy in their curriculum. This e-mail can be found in Appendix A. Within this e-mail the author supplied a definition of PAL as defined by Henning et al. (2006) as the "process of gaining knowledge, understanding, or skill in athletic training-related tasks among students who are at either different or equivalent academic or experiential levels through instruction or experience." From the August 2011 e-mail from the principal investigator, 78 programs responded and of those 35 programs specified they did have an intentional PAL pedagogy. These 35 programs were then contacted again in October of 2011 inquiring if they would provide graduate contact information to the investigator for the purpose of interviewing students for the study. This e-mail can be found in Appendix A. Twelve programs responded that they would provide information to the principal investigator regarding their graduates. These 12 programs represented a wide variety of programs both in NCAA affiliation, size of their institution, and geographic location, as well as a number of graduates.

From these 12 programs, 7 of the ATEP's program directors were contacted in December of 2011 asking for their permission to interview graduates of their program. These 7 programs were selected based on purposeful and convenience sampling due to the Program Directors at these institutions being willing to promote the study as well as their willingness to allow for graduates to be interviewed. Purposeful sampling allows the researcher to select subjects that can "purposefully inform an understanding of the research problem and central phenomenon in the study" (Creswell, 2007, p. 125) while

convenience sampling is chosen so that the researcher "represents sites or individuals from which the researcher can access and easily collect data" (Creswell, 2007, p. 126). The 7 programs were purposefully and conveniently chosen due to their implementation of a PAL pedagogy in which participants would be able to discuss their perception of PAL. Of these 7 programs that were contacted, 5 responded giving permission to utilize their graduates for this study. The program directors, when contacted regarding their graduates participation in the study, agreed to personally promote the study to these graduates via a personal email to potential study participants and in person interactions.

In May of 2012, the investigator sent another e-mail to program directors who purposefully-implemented a PAL curriculum due to a low response rate from the initial five programs that had volunteered for the study. Twenty four programs were sent an e-mail in late May, 2012 requesting their permission to use their 2010 and 2011 graduates in this study. The 24 programs were sent the same e-mail that were programs in December of 2011 which can be found in Appendix A. Of these 24 programs, 3 more programs volunteered for the study.

Table 1 details information regarding the eight ATEPs that were contacted and agreed to forward an e-mail to potential participants in recruiting subjects for this study. These eight programs were given pseudonyms in order to keep the identity of each program anonymous.

These eight Athletic Training Education Programs vary in university size, geographic location, and numbers of graduates per academic year as demonstrated in Table 1. This study reported here interviewed thirteen 2010 and 2011 athletic training

Table 1

Athletic Training Education Programs Volunteered for Study

Program	Number of Graduates from ATEP per Year	NATA District	Affiliation (NAA and Level or NAIA)	Number of Students Enrolled on the Physical Campus
Program 1	14-20	5	NCAA I	< 20,000
Program 2	8-10	8	NAIA	< 2,000 but > 5,000
Program 3	9-13	10	NCAA I	< 15,000 but > 20,000
Program 4	4-6	4	NCAA III	> 2,000
Program 5	12-14	4	NCAA II	< 5,000 but > 10,000
Program 6	7-10	7	NCAA I	< 20,000
Program 7	2-5	6	NCAA I	< 10,000 but > 15,000
Program 8	6-10	4	NCAA II	< 2,000 but > 5,000

graduates through phone interviews who had experiences with PAL at varying ATEP programs.

The ATEP Program Directors were contacted by the investigator and asked for permission to interview graduates of their 2010 and 2011 class. This cohort of graduate was chosen since a time frame of one to two years post-graduation would allow the investigator the opportunity to see if there had been an impact of a purposefully-implemented PAL pedagogy. Graduates who had only been practicing one to two years post graduation still had a fresh perspective on their PAL pedagogy in their educational experience and how the PAL experience impacted their practice as an athletic trainer post-graduation.

Program Directors were given requirements for selection of research participants. These requirements included: graduates who were presently certified athletic trainers; graduates who were presently employed as an athletic trainer (working directly as an employed athletic trainer with duties to include prevention, recognition, evaluation, rehabilitation, and treatment of injuries); and graduates who were engaged in a purposefully-implemented PAL pedagogy during their education. The Program Directors were sent an e-mail from the investigator to forward to potential research participants.   In this initial e-mail contact was the investigator's contact information including e-mail and phone number. Participants who volunteered for the study forwarded their contact information to the investigator. Participants were also told they would receive a $25 Gift Card as an incentive to participate in the study. This e-mail is provided in Appendix C.

Program Directors were sent two follow-up e-mails to the potential research participants at intervals of one week after initial contact and two weeks after initial contact. The Program Directors were sent an e-mail with instructions to forward the e-mail to potential research participants. These follow-up e-mails are provided in Appendix C. The research consent form is also provided in Appendix B.

Data Collection

Table 2 outlines data collection and time-line:

Data were collected through semi-structured phone interviews of graduates from purposefully-implemented PAL pedagogy. Semi-structured questions allowed for individual responses and gave opportunity to ask more probing or follow-up questions if further clarification was necessary. Phone interviews were also more practical for this study than one-on-one interviews due to graduates spanning across the United States and

Table 2

Data Collection and Time Line

Research Outline	Month & Year of Completion
5 Athletic Training Education Programs consent for study	December 2011
IRB approval	April 2012
Pilot Study	April 2012
5 Programs Directors sent the initial e-mail to be forwarded to potential research participants	April 2012
Research participants contacted for consent and interview of 8 participants	May 2012
E-mail sent to Program Directors searching for more programs to volunteer for the study	May 2012
3 more programs volunteer and sent the initial e-mail to be forwarded to potential research participants	May 2012
Research participants contacted for consent and interview 5 participants	May-June 2012
Data analysis	August 2012

the study would have been costly and very time consuming to travel to all graduates for one-on-one interviews. Dates and time for interviews were determined in coordination with the research participants. These interviews were recorded on the investigator's password secured laptop.

The interview protocol was based off of the research of Henning et al. (2006), Henning, & Marty (2008), and Mackey et al. (2010) as well as the investigator's experience with PAL. The questions sought to explore the graduates' perceptions of PAL and its impact on their jobs. The interview script can be found in Appendix D and the interview questions and protocol can be found in the Appendix E. The interview included both open and closed ended questions. The questions asked through the

interview looked to explore the students' perceptions of an intentional PAL pedagogy and its implications on the students' experience as a new athletic trainer out in the field. The interview questions focused on the graduates' perceptions on a purposefully-implemented PAL pedagogy. The questions were semi-structured in which the researcher planned a series of open-ended questions focusing on different parts of the research question. Through this format of interview questions, the investigator was able to ask follow-up questions as necessary. The questions were formatted so participants could easily understand them as well as "cause the participants to reflect on experiences that they can easily discuss" (Creswell, 2005, p. 223).

Research questions were developed by the investigator. This was done through outlining interview questions from the research questions. Once questions were developed, the principal investigator submitted the interview questions to two fellow faculty athletic trainers who provided feedback and further framing of the questions. General questions regarding graduates' perceptions of PAL post-graduation were included along with some optional probing questions or follow-up prompts which assisted in clarifying as needed.

The interview questions were piloted prior to this investigation with a sample of athletic training students who represent the same target population and were excluded from the final data analysis. In April of 2012, three pilot study subjects volunteered for the study. They had previously been involved in a purposefully implemented PAL and had graduated in 2011. These three subjects went through the interview protocol and questions. Following the interview they were sent a list of the interview questions and were asked if anything needed to be defined or questioned differently to assist in clarity.

The pilot study participants were then debriefed to obtain information on the clarity of interview questions and their relevance to the studies aim. Feedback included: phrasing of questions to make them clearer, clearly defining terms, and the investigator needed to speak more clearly and slower. The pilot study allowed for the investigator to refine and develop the interview questions and protocol. From the feedback provided, changes in interview questions and protocol were altered to improve clarity.

All participants were required to sign a consent form, which was e-mailed to them prior to the interview. No interviews took place prior to this consent form being returned. Each interview with research participants was recorded. The recorded interviews were replayed for transcription. All transcriptions were sent via email to the research participants for a final review and to make sure what was written was what they stated in the interview. Any feedback from this review was noted. The investigator also took notes during the interview process. These notes along with the recording and transcription notes were stored in the investigator's locked office. Any audio files were stored on an external hard drive at the end of the interview sessions. The records of all interviews were kept in separate files and were labeled by a unique number.

Procedures for Data Analysis

To analyze the data for this study the goal was to discover patterns, ideas, explanations and a deeper understanding of PAL's influence on athletic training students post-graduation. The analysis of the data was first organized, summarized into codes and then finally interpreted.

The data were organized first through transcribing the interviews. The investigator choose to transcribe the interviews herself in order to be fully immersed in

the data. All the audio recordings were transcribed and reviewed by the investigator to verify accuracy. All research participants were sent transcription notes to ensure that they were an accurate reflection of their responses.

Transcriptions were read and re-read to organize the data. The transcriptions were read line-by-line to make sure they make sense and to fully understand what the interviewees were saying. Through this process the data were separated into workable units or segments. The data were organized into emic and etic data. Emic data is the wording and phrases given by the participants. Etic data is the researcher's interpretations or what the researcher might synthesize from the emic data.

Through this organization the investigator looked for words, phrases, or events that seemed to stand out. From these words and phrases the investigator developed codes which are often called open coding. Open coding is a process where the transcribed and interview notes are reduced into meaningful segments through which the investigator will assign names to each of the separate segments (Creswell, 2007). Through open coding the investigator sorted the data according to topics, themes and issues important to the study. During this open coding, the investigator made notes in the margin of the transcriptions. The investigator wrote down "notations next to the bits of data that strike you as potentially relevant for answering your research questions" (Merriam, 2009, p. 178).

Continuing through the data analysis the investigator took these small segments and built larger and broader themes from which to make comparisons of similar themes across the categories. These patterns became the categories or themes (Merriam, 2009). Each interview was analyzed this way and then the data were merged together to make a

master list. From this master list the investigator looked for "relationships among categories and pattern that suggest generalizations, models, and conclusions" (McMillan, 2011).

The final step of data analysis was "the researcher interpreting the findings inductively, synthesizing the information, and drew inferences" (McMillan, 2011). From the themes the investigator interpreted the data to develop tables which created an image of the information. From these tables the investigator layered the information from which to present comparisons. The investigator included her dissertation advisor in this process of review to verify the data analysis. This included the advisor looking at the transcription notes and determining themes to verify if they were similar. From this visual table and categories the investigator ultimately developed a "rich description" of how PAL impacted athletic training student post-graduation.

Credibility

The data analysis and conclusions were accurate and trustworthy due to the author's use of triangulation, member checking, peer debriefing, and conducting a pilot study.

1. Triangulation involved seeking the convergence of findings, cross validation among different sources and methods or data collection (McMillan, 2011). The researcher utilized both transcriptions and interview notes, utilized investigator triangulation through using a local Whitworth University colleague and the researcher's advisor to review the data and themes. Through the study, the investigator also compared the participants'

perceptions of PAL as compared to previous results in athletic training education.

2. Member checking involved the researcher asking the participants to review interpretations and conclusions, and the participants to confirm the findings (McMillan, 2011). All interview participants received via e-mail, a copy of the interview transcripts for review, clarification and suggestions. The interviewees had an opportunity to provide feedback and clarification from the interview notes. The participants were given the opportunity to provide comments and feedback on accuracy.

3. Peer debriefing involved the researcher asking a colleague to review the study for credibility and determine if the results seem to follow from the data (McMillan, 2011). The principal investigator used expert opinion from a Whitworth University colleague who had no connection to any of the programs interviewed and who was detached from any affiliation with the study and interviewers. This colleague was sent transcription notes at which time she created her own codes. The principal investigator compared her colleague's data to the investigator's results.

4. A pilot study was conducted to refine the interview protocol in March, 2012. This included three athletic training students who were interviewed following the questions and protocol provided in Appendix C. These three subjects were not included in the final study and data collection. These students were recruited from an athletic training education program in which the investigator had previously been employed that had a required PAL curriculum. These

pilot participants were not from the eight programs that were utilized for data collection and analysis. The pilot-study participants evaluated the interview questions and interview protocol. At the conclusion, participants provided feedback regarding the interview protocol and questions and changes were made as necessary.

Through triangulation, member checking, peer debriefing and conducting a pilot study, the author improved credibility and validity.

Summary

This chapter presented the methodology that was utilized by the investigator for selection of participants for this qualitative study. Included in this chapter was a description of methods of data collection, as well as data analysis and synthesis. The author is familiar with studies dealing with PAL as an effective tool in laboratory and clinical settings; however, currently there were no studies that had examined the PAL experience through the perspective of students once they were practicing in the field of athletic training. This study was the first in athletic training education that investigated a purposefully-implemented PAL curriculum from the student's perspective post-graduation.

Chapter 4

Data Analysis

Purpose Statement

The purpose of this study was to investigate how graduates of a purposefully-implemented Peer-Assisted Learning (PAL) pedagogy perceive that this pedagogy influenced their transition from an athletic training student to performance as an entry-level athletic trainer. This was a phenomenology qualitative research study that explored the experiences of 13 graduates of athletic training programs who took part in a purposefully-implemented PAL pedagogy. The investigator did further exploration of the phenomenon of a purposefully-implemented PAL pedagogy to understand the essence of a PAL pedagogy, how it influences graduates in their first post-graduate work, and how it contributes to the undergraduate curriculum.

Participants

The investigator conducted phone interviews with 13 participants who graduated from Commission on Accreditation of Athletic Training Education (CAATE) programs that implemented a PAL curriculum during the student's education. The investigator recruited Athletic Training Education Programs (ATEP) to participate in the study. Eight programs volunteered for the study. These ATEP's varied in geographic location as well as size of institution and number of Athletic Training graduates. Table 1 details information regarding the eight ATEPs that were contacted and agreed to participate in this study. These eight programs were given pseudonyms in order to keep the identity of each program anonymous.

All ATEP directors were sent an e-mail to forward to their 2010 and 2011 graduates who were currently employed as certified athletic trainers (working directly as an employed athletic trainer with duties to include prevention, recognition, evaluation, rehabilitation, and treatment of injuries). Program Directors forwarded the e-mail to potential participants. Included in the e-mail were the investigator's e-mail and cell-phone number. Potential participants were asked to contact the investigator regarding their willingness to participate in the study. Two follow-up e-mails were also sent to attempt to increase response rate of graduates. These e-mails can be found in Appendix B. Fifteen participants provided contact information and volunteered to participate in the study. However, two participants dropped out prior to conducting the phone interviews; one due to time constraints and the other for unknown reason since phone calls and e-mails were unanswered. The 13 participants were given identification numbers to keep their responses anonymous. All participants signed a consent form prior to the phone interview.

The participants for the study did not supply any demographic information. All subjects were employed as certified athletic trainers at the time of the study. Table 3 outlines the study participants and the setting in which they were employed. All subjects were given numbers to serve as their identification and therefore, their responses were confidential.

Eight of the 13 participants were pursing their master's degree; 7 of these 8 were serving as graduate assistants in athletics while 1 participant had a teaching assistantship. The teaching assistantship participant also worked for additional income as an athletic

Table 3

Study Participants and Settings

Subject	Current Employment
1	Clinical Setting
2	High School
3	Graduate Assistant
4	Graduate Assistant
5	Graduate Assistant
6	Graduate Assistant
7	Graduate Assistant
8	Graduate Assistant
9	Clinical Setting
10	Graduate Assistant
11	High School
12	Teaching Assistant
13	College Athletic Trainer

trainer. One participant was a college athletic trainer, 2 were employed in the clinical setting, and 2 others were employed in high schools.

Throughout the literature there has been a variety of ways PAL has been described. For this study, four descriptors were given to the participants asking if one was familiar to them. If one descriptor was familiar and utilized at their institution the investigator would then read that definition. The four terms and definitions were:

a. Peer modeling: a process by which students pattern their thoughts, beliefs, strategies, and actions after those who demonstrate targeted actions, verbalizations, and expressions (Topping, 1998).

b. Peer assessment: an instructional technique in which a student judges the level of quality of a peer's understandings and provides corrective comments to improve the execution of tasks (Liu & Carless, 2006).

c. Peer mentoring: a supportive relationship between two students of differing academic or experience levels within the professional program with a focus on acquiring norms, values, knowledge, and skills to function as a future professional (Scott, 2005).

d. Peer assisted learning: a process of gaining knowledge, understanding, or skill in athletic training from students who are at different or equivalent academic or experiential levels (Henning et al., 2006).

After each subject identified the term and matching definition used at their respective institution, this agreed term was utilized throughout their interview process. Throughout this chapter the investigator did not change terms used by the participants to keep all wording as given by the interviewees.

Data and Findings

This chapter includes data analysis for the research question. Data were collected for this study through 13 recorded phone interviews. The investigator also kept notes during the interview process. All research participants were asked the same questions. These interview questions can be found in Appendix E. The steps of data analysis that were followed in this study were first organizing the data, then summarizing into codes,

and finally interpreting the data. The first step in organizing the data was transcribing the recorded interviews. The investigator transcribed all of the interviews herself in order to be fully immersed in the data. The 13 interviews resulted in over 100 pages of typed text. The data were double spaced with room for the investigator to delineate any units of general meaning or quotations deemed as significant in understanding if PAL influenced the athletic training student's transition to an entry-level professional. The principal investigator left all phrases in the participants' own words and also emailed the interview transcripts to the participants for their review or member checking. Only one participant responded with any feedback and that participant gave more clarification regarding one statement. All subjects did respond verifying that the transcriptions were accurate representations of what they said during the interview.

The transcriptions were then read and re-read to immerse the investigator in the data and to become familiar with each interview while keeping in mind the one research question. After reading each interview the investigator made a separate page of notes, outlining the key points from each participant's interview. The investigator then examined the interview transcriptions and marked responses by participants that were related to the research question. When a statement was made that reflected the research question it was circled and notes were made in the left margin. The transcriptions were hand coded using circles and notes to highlight words and phrases that corresponded with how PAL impacted the student's transition to an entry-level professional. Through this coding process several words and phrases were identified.

Next the investigator utilized an Excel spreadsheet to input quotations and remarks from each participant. Columns of the spreadsheet were labeled with a term that

was used to describe how the participant's perceived PAL curriculum influenced their transition to an entry-level professional. Each research participant's interview data were filled in on separate rows utilizing their identification number. Remarks or quotes were copied into each cell with their respective column heading. Through this process the investigator coded groups of words and phrases to develop categories related to the research questions. Every interview was coded in the same manner.

The investigator used two mentors for peer debriefing. One mentor was a colleague at Whitworth University and the other was the investigator's graduate advisor. The colleague from Whitworth University had no connection with any of the participants interviewed and was detached from any affiliation with the study. The investigator's advisor had no connection with any of the research participants aside from the affiliation with the study due to overseeing the investigator's dissertation process. The investigator sent a copy of the Excel sheet and a list of themes to her advisor and colleague. Both the advisor and Whitworth University colleague reviewed the Excel file and through personal communication stated they agreed with themes found from the interview transcription.

Overview of Themes

Six themes emerged from the data: improved communication skills, enhanced teaching skills, improved clinical reasoning, improved confidence, socialization, and gained a deeper understanding of athletic training content which led to their success on the Board of Certification exam.

- Improved communication skills: Athletic training students reported they utilized medical terminology and developed communication skills that

assisted in their transition to an entry-level professional as a result of experiencing the PAL curriculum.

- Teaching skills: Most of the graduates stated the PAL experience helped them learn and develop critical teaching skills which are presently assisting them as they instruct and work with students. These teaching skills also assist them through educating coaches, parents and athletes regarding athletic injuries in their present work settings.

- Improved clinical reasoning: Many students stated they learned to "throw ideas" off each other which assisted in differential diagnosis skills and they are still using this improved decision making as certified athletic trainers.

- Improved confidence: Students perceived that through PAL curriculum, they felt more confident in their skills as an athletic trainer.

- Socialization: Participants stated that through the PAL curriculum they developed relationships with their peers and several participants learned skills to socialize and network with other allied health care professionals.

- Gained a deeper understanding of athletic training content which led to their success on the Board of Certification exam: Participants stated they gained a deeper understanding of the content while teaching their peers in the PAL curriculum and it served as a helpful review. Participants stated that they attributed their success on the Board of Certification exam to their involvement in PAL pedagogy.

Utilizing the participants' own words adds credibility to the findings of the investigator. Quotations from the participants will give the reader a better understanding

of how a PAL pedagogy impacted athletic training students' transition to that of entry-level professionals.

Improved communication skills. For most participants being involved in a PAL curriculum influenced their communication skills. Nine of the 13 subjects stated that through the PAL curriculum their communication skills improved as an entry-level athletic trainer. Participant 1 stated that "communication skills are important in my current practice and this was gained through my peer mentoring."

Participant 2 stated:

Peer mentoring gave me the opportunity to practice the skills I need to be a better athletic trainer. It gives me the opportunity to approach situations differently than I had in the past. I understand the need to explain to students what is injured, how the injury occurred and what needs to be done in order for them to return to play. I try to explain the injury in simple terms that make sense to the athletes. I learned that amongst peer mentoring we were able to use medical terminology but when you turn around and use it with a high school athlete there may be a lot of confusion . . . I was able to learn to kind of simplify the terminology when speaking to athletes.

Participant 3 stated that through peer mentoring, it was noticed they were able to better communicate with athletes regarding their injury:

I think just working with other people and it has helped me to kind of organize my thoughts and how to explain things to other people. Whether it be an athlete, trying to explain an injury that they may be going through or trying to get them to understand what is going on with their body after they have been injured or sick. I think that has been helpful to also explain things to other athletic trainers that may be more knowledgeable. Trying to explain at the different levels of understanding, you are able to explain it more to an athlete who may not know necessarily the intricacy of human physiology and all that sort of stuff and you may go on to explain to another athletic trainer or doctor in a more complex sense. I think that kind of came from the peer mentoring atmosphere.

Participant 4 also felt that peer mentoring influenced her current role as an athletic trainer and how she speaks to athletes. She learned to communicate effectively:

Just learning to communicate with someone and how to teach someone is different than teaching yourself, you are having to learn how to communicate effectively and I think that was really beneficial to be able to explain how things work and be able to explain to younger student who is just learning. It was really helpful for me to just to learn how to explain it to them which helped me be able to communicate effectively to my athletes as well regarding trying to communicate to them with what was going on with different injuries and stuff like that.

Participant 12 recounted along the same lines as Participant 2 that through the peer mentoring, she learned to effectively communicate with athletes regarding their injuries and not to use terminology that may confuse the athletes:

When working with athletes and talking to them about injuries, I have learned to break it down like you would when you are mentoring a young athletic training student . . . having to learn to do this with younger students has allowed me to be able to do that with athletes and do it in a way that is just explaining and not talking down to them.

Participant 5 also stated that peer mentoring assisted with being able to communicate better with the athletes. Through the peer mentoring, Participant 5 was required to communicate with fellow peers and "explaining to someone the way the modality works carries over to trying to explain it to a student athlete when you're persuading them to go a certain route with their rehabilitation or their treatment process."

Participant 8 indicated that through the peer mentoring his skills of communication were greatly impacted, "communication would be the biggest learning or thing when presently working with athletic training students."

Participant 2 also stated that PAL influenced how she communicates with other allied health care professionals as well. She stated that "just knowing how to handle situations and how to communicate with doctors, ER staff, physical therapists, occupational therapists and any kind of allied health care professional that you work with."

Most participants reflected on their communication skills and stated that PAL impacted the way they communicate with peers, coaches, athletes and other allied health care professionals. Communication skills were the most commonly given answer when asked how has PAL impacted the graduate's current position.

Teaching skills. Nine of the 13 subjects stated that they learned valuable teaching skills through PAL. Currently 12 of the participants had a role in teaching students which ranged from high school to college students. The teaching role also varied across all work settings; one participant served as a graduate teaching assistant in a formal classroom setting, several of the collegiate graduate assistants also served as clinical instructors for undergraduate athletic training students, and one high school certified athletic trainer taught high school athletic training students in the athletic training room.

Several of the participants reported that they learned through teaching. Participants 2, 3, 4, and 11 all stated that one has to have a deeper understanding and must know the applicable concept well in order to teach students. Participant 2 emphasized the learning through teaching:

> The more time you are given with tutoring and mentoring the underclassman the more you improve your skills. The more you do the skill the more you explain it, the better you can learn it and the more efficient you become at it.

Participant 2 also stated that peer mentoring helped in her current role as an Approved Clinical Instructor (ACI). Participant 11 stated that "if you know something good enough to teach it, then you really know it good enough and have learned."

Participant 4 explained that PAL helped to explain and teach athletes about their injuries:

> Just being able to explain stuff to a younger student and having to think it through in your head and being able to teach it helps you to also be able to teach that to your athlete when they have questions . . . I feel like it was easier to answer some of the athletes questions because I had already explained it before to somebody.

Participants 6, 10, 11, and 12 reported that PAL directly impacted their current role in teaching undergraduate students and shaped their current teaching strategies. Participant 10, in the current role as a Graduate Assistant, stated that "being a peer mentor helped me to know how to work with students and teaching people different skills in athletic training." Participant 12 serves as a graduate teaching assistant and attributed much of her learned skills in teaching from the PAL curriculum. She said the following when asked about any benefits that she gained through serving as an upper classman mentor:

> I definitely think that I gained a little bit of teaching experience in a way. I learned how to answer questions and look at things differently. I am in graduate school and I have a teaching assistantship and I can definitely see those same qualities of where I needed to look at things differently and try to understand where someone is coming from who doesn't understand the material necessarily. Like I can teach it but if I understand it, it might be hard for me to flip it around and try to understand why somebody else might not understand it. I definitely think that helped me out a lot. Because I would teach a lot of the underclassman and I would hold tutoring sessions for them or review sessions and come in extra hours and help them study for practicals. So I think it really came to my advantage with being a teaching assistantship in graduate school just the different characteristics and traits that I learned from doing that (peer mentoring).

Through the PAL curriculum Participant 6 had to explain what he was doing with the athletes while teaching fellow students. While Participant 6 was serving as a peer, students often felt more comfortable coming to him to ask questions and he felt "better equipped to answer their questions." He stated that:

> I am currently working as a Graduate Assistant at an accredited undergraduate program. I think at my current situation it helped me to step into a role to where I may not necessarily be in their program but they still feel comfortable enough to come to me for some stuff and I'm better equipped to answer their questions. I

guess it is kind of the same as when I was in undergrad, I just have now stepped more into a staff type role rather than an older student type role, and it has kind of helped me turn over to where I am now . . . just to talk to the students that are in the program making sure they are learning what they need to learn and going over what they need to go over.

Participant 12, within her role of a graduate teaching assistant, developed her teaching methods and learned different learning styles through PAL. Participant 12 explained that:

I learned how to answer questions and look at things differently. I think it really came to my advantage with being a teaching assistantship in graduate school just the different characteristics and traits that I learned from doing that . . . working with all types of students in my undergrad really helped to reinforce how to approach each of the different learning styles appropriately.

Participant 10 also stated that through PAL she learned different teaching styles "I think that being a peer mentor it helped me kind of know how to work with students and teaching people different skills in athletic training." Participant 4 said that now in the role of a graduate assistant, PAL "had a really positive impact. I have always been interested in or having more of a teaching role in the athletic training field. It was helpful for me just sort of have that teaching experience with someone."

In the current role of a high school athletic trainer, Participant 11 works with his athletic training students in the athletic training room and reported that he gained teaching skills through the PAL curriculum:

I think it helped me, you learn to interact with people. It really helps with interaction and fine tuning, and explaining things to people and teaching skills. I use a lot of those things that we did when I was in college and any time any kind of learning point comes up, I try and take the time with them (high school athletic training students) in the same fashion that I learned things or particular skills.

Participant 11 further stated that his peer mentoring in college had a contributing impact on his present work with his high school athletic training students.

Participant 1 stated that PAL assisted in "teaching while working." Participant 1 works in a clinical setting and at times there are observation students that come into the clinic. "Peer mentoring did help in having students that now come by our office to just observe, I think that I am better at teaching while working" through peer mentoring. Participant 1 also stated:

> It can be really easy while working for example, if no one is asking you questions while you are working and you do a physical exam on a patient. It can go without saying anything. You can go ahead and talk to the patient, do your special tests and examination and ask the patient certain questions. If you put a third body in the room who is watching you feel like you are under the microscope and you feel like everything you are doing is being criticized even though the person is less experienced than you. I think that being able to already teach a mentee and talk about certain skills prepared me to have eyes on me and have people watch me. Teaching while working doesn't necessarily mean you have to be speaking but sort of showing with mannerisms how you are doing something while you are performing your job.

The majority of the participants teach in their athletic training role. Nine of the 13 stated that the PAL pedagogy had an impact on their teaching skills which included: improved skills in teaching, deeper understand of learning styles, "teaching while working," and additionally learning while teaching.

Improved clinical reasoning. Eight of the 12 participants stated that their clinical reasoning had improved due to their involvement in a PAL curriculum. Of the remaining 4 participants, 1 stated that it might have helped a little while 3 of those participants felt that critical thinking was developed through more time and experience in the profession and not related to PAL. Most participants stated that while working with their peers in PAL they bounced ideas off of each other during their athletic training education, developed skills that prepared them to think critically and to do differential diagnosis on their own post-graduation.

Participants 1, 2, 3, 4, and 8 stated the PAL curriculum provided them an opportunity to bounce ideas off fellow classmates which then carried over to current jobs. Participant 1 stated that the PAL curriculum did help him make clinical decisions in his new role as a certified athletic trainer in a clinic:

> I can think of specific professors and also the mentor I had that did help me in dealing with people and kind of observing differential diagnosis . . . you know you hear hooves and you think horse and not a zebra and I think things like that kind of staying focused on what you are looking at and not at what you are hoping for in a way. It taught me about bouncing ideas off of somebody and when I had an idea of what I thought something was I could talk to the person mentoring me. Now that I am working and that mentor is not there, I still feel that I am bouncing things off my own mind and staying focused and looking at the correct thing.

> Participant 3 explained:

> I remember being in the classes and in the athletic training room. We'd all be talking through issues and talk through different injuries or different evaluation stuff. Talking it out loud with my peers kind of helps me now because I am able to run through some of the questions I may have missed in undergraduate I am now able to pick up on while evaluating an athlete or figuring out what kind of treatment protocol I want to go through with an athlete. I am able to kind of reason through that and remember things that I was learning from working with my peers and apply that now.

> Participant 12 said that because of the PAL curriculum one learned to talk through situations which helped with clinically reasoning. Through the peer mentoring, her classmates would have discussions which she stated:

> …allowed me to feel confident in my decisions that I make when I am alone when I don't have anyone else to consult because I have talked all these situations out before. It really has allowed me to feel confident in the decisions that I make when there is nobody else there.

Participants 5 and 11 agreed that through the PAL curriculum, they were able to look at the big picture and be able to use differential diagnosis with their peers. This has now carried over to their current positions. Participant 5 stated that:

Sometimes I get caught up on one specific thought or injury that I think it is. Through mentoring peers I am now reminded by students that I am mentoring or by my peers who are asking questions, and I am reminded about other things that I need to look for, other things that I might have missed.

Participant 11 said that "it helped me to understand the entire evaluation process."

Participant 8 stated, when asked if peer mentoring assisted with her clinically reasoning, that she is not narrowly focused due to the PAL curriculum:

I know it happened in my undergrad and it happens less now but when an athlete would come in through undergrad and they would say 'my knee hurts' or 'my ankle hurts' I would get too focused. And I would essentially get tunnel vision and I get one or two positive tests and I would leave out other things. And I would do the same thing with my classmates and we would practice our evaluations and they would say 'make sure you rule out everything else' and it would help my brain moving and keep my brain flowing so I didn't get stuck in the tunnel vision.

Eight of the research participants felt PAL curriculum assisted in their transition from an athletic training student to an entry level professional because they were able to think clinically and use differential diagnosis on their own.

Improved confidence. Seven of the 13 participants stated that their confidence was impacted through the PAL curriculum. Participants explained that they gained confidence in their athletic training skills due to teaching it to another peer. Participant 3 said that through PAL "I think I am able to apply my skills more now with confidence." Participant 4 also stated that:

Peer mentoring impacted confidence through knowing that I knew the information from explaining and teaching it before. It helped me to be more confident in what I was doing and be confident when I was talking to an athlete and when I was on my own. And just being able to explain to them what I was doing and what I was looking for and explaining injuries and stuff like that.

Participants 11 and 12 acknowledged that they gained much of their confidence through the PAL curriculum. Participant 12 stated "I think that this confidence and this

self-assuredness came from the encouragement and support that I received through a peer

mentoring program."

When Participant 9 brought up improved confidence it was mentioned that he felt

more confident in his evaluation skills due to the PAL curriculum:

> Oh yea, confident. I would say in an evaluation setting, confidence is one of the
> most important things you can have. You need to gain confidence of the patients
> and if you aren't confident they are not confident in you. SO, in my setting now I
> am definitely confident because of the confidence I gained from my hands on
> experience and peer mentoring.

Socialization. Six of the 13 participants stated they gained socialization skills

through the PAL curriculum. Generally participants said they developed relationships

with their peers and 3 of the 6 stated that they developed skills in socialization with other

Graduate Assistants and health care professionals. Those acquired skills in socialization

were beneficial in their current jobs.

Participant 1 stated that the peer relationship was very important to him. Through

the PAL experience he learned more than just skills; during his experience he developed

a relationship in which he contends that his peer mentor was "like having a sister."

Participant 7 served as an upperclassman peer mentor, she felt that her role was to

mentor and develop a "companionship" with her fellow peers. She felt that the PAL

experience she could help the underclassman see, through observing her, what athletic

training was all about while building that "companionship."

Participant 11 responded that through the PAL experience, he learned to "interact

with people" and Participant 2 stated that she gained "people skills." When Participant

13 was asked what benefits he gained from being involved in the peer interaction, he

stated that:

Networking and socializing and getting to be friends with one or two of the students that are a year ahead of me. This helped me out later on down the road. When they got out of school and had a career and I networked with them and (it) made a few opportunities available to me that way, just because I had gotten to know them.

Many of the research participants felt this socialization that occurred during their PAL experience was extremely important and they transferred this to their current practice as an athletic trainer. Learning these important socialization skills provided benefits working with other Graduate Assistants, athletes, coaches and other allied health care professionals.

Gained a deeper understanding of athletic training content which contributed to success on the Board of Certification exam. Ten of the 13 participants stated the PAL curriculum deepened their understanding of athletic training content required of them as an entry-level professional and 6 of the 13 participants stated that success on the BOC exam was due to their involvement in a PAL curriculum. The majority of participants responded that through teaching fellow peers skills and content in athletic training, they had a better understanding of the concepts assisting in review of material which led to their success on the BOC exam. Participant 3 stated that:

When you learn something and read it in the book, it is different than when you do it and learn more about it and then you go and teach it. You fully understand what concepts you are trying to grasp. I think it helped to deepen my knowledge of the subject matter that we were learning.

Several of the participants stated that the PAL curriculum served as a review of material which helped in reaching a greater understanding of the concepts. Participant 4 said that:

Explaining it which in turn helps you understand the material better. Or if it was something you had forgotten and you had to go back and re-learn it or go back and review . . . through my peer mentoring experiences with my fellow students I

was able to recall what I had learned much easier than just memorizing from a textbook.

Participant 5 mentioned that the material "stuck" better and information was better retained. "It reaffirmed a lot of my skills and a lot of my knowledge through the repetition" of working with peers. Participant 6 said that it felt like a "refresher course" and he stated that:

> You kind of forgot you had gone over that kind of stuff. But once they had mentioned it you know you remember it exactly how to do it and what you are doing. . . . So I didn't see it as anything I necessarily learned or relearned from that (peer mentoring), more of just a refresher.

Participant 10 recognized that "it made me think back and review other material that I hadn't covered; or things I wasn't seeing in the clinical setting or things you reviewed from class. So it made me kind of review and kind of look more in-depth at these competencies." Participant 13 stated that "dealing with peers just helps you review and retain more information."

Participant 12 stated several times that the PAL curriculum assisted her in better understanding:

> Being able to teach those younger than me helped really reinforce things that I knew and they also asked questions that I didn't necessarily think about all the time. It made me have to go and really learn things because they had looked at it differently than I did. So I would have to learn to look at it from their perspective too. It helped reinforce those proficiencies in my head as a senior because I hadn't had to do those proficiencies for two years . . . I think you learn so much better through teaching someone.

Participant 6 similarly agreed that through the PAL curriculum he developed a deeper understanding of athletic training content:

> In my opinion if you can go through and do something without having to explain it you may not know exactly what you are doing; but I think you understand something better when you are able to explain it and do it as the same time. I think it just help you to understand what you are doing and it helps the student

understand what you are doing and you just understand everything behind what you are doing. You aren't just doing stuff to do it. You have to be able to explain it. So being able to explain what you are doing helps to actually realize and understand what you are doing. I think peer mentoring helped in that aspect.

Two interview participants even stated that through the PAL curriculum they

were able to review for the Board of Certification (BOC) exam. Participant 8 stated that:

Gave me a chance to help review for the BOC and some of the questions and concepts that they were reviewing. It helped them and helped me because I remembered being at the same spot. And I was trying to break things down to a level so they wouldn't have to try and figure things out on their own or research about the concepts and ideas that they were learning in class or that we would discuss when we had questions.

Participant 11 also reflected that it was key to:

Studying for the exam which I was getting ready to take. I wouldn't say I forgot about stuff but it kind of gets in the cobwebs and then when you get that underclassman asking for help it is a good process of really review and you realize that you know more about it then you though you did. Going over it with them is a great way of learning as well.

Participant 2 said that PAL impacted her BOC exam and when asked to clarify

she stated:

Through my peer mentoring experiences with my fellow students I was able to recall what I had learned much easier than just memorizing a textbook. At our clinical rotations, once practice had started and the athletes were no longer needing our attention, the athletic training students would practice special tests, review anatomy, go over position statements, review medical terminology and other things. You name it we reviewed it. We went through any evaluation, upper extremity, lower extremity, we would go over concussion evaluation, how to handle different injuries, we would discuss general medical conditions, we would review rehabilitation, it was kind of like we used each other as an open book study guide. Instead of just reading a book we were able to quiz each other.

Participant 8 also reported success on the BOC due to his PAL curriculum:

It definitely helped. Athletic training is tricky in that we learn out of the textbook but we have to learn and practice on real patients. Maybe it's just me but I really struggle with some of the concepts until I can actually put them into practice. So having someone to just review the concepts together and make sure that I was

doing them correctly, and just reviewing the concepts in and of themselves was really helpful to my success on the BOC.

When Participant 9 was specifically asked how the PAL curriculum led to successful passage of the BOC exam this was explained:

> When I took the BOC exam the questions weren't worded in a way that you would get from a textbook. They were basically scenarios that you would have to draw knowledge from the textbook. They were scenarios or kind of face experiences and you had to figure out how to use the knowledge that you learned in the classroom. So I think the experience with peers and the hands on stuff that I did with them helped me with that (BOC exam) because I had already done some of that.

Participant 11 felt that through the PAL curriculum he was better prepared for the exam and stated that he "contributed a lot of the students passing (the exam) in the past because so much of peer mentoring in school helped. When I got to the test it was sort of a breeze."

Half of the research participants emphasized they were successfully prepared for the BOC exam as a result of participating in PAL curriculum.

Conclusion

This chapter presented the data analysis process and the six themes. The findings from this research shed light on how PAL pedagogy impacts the students as they transition to an entry-level professional position. These themes included improved communication skills, teaching skills, improved clinical reasoning, improved confidence, socialization, and gained a deeper understanding of athletic training content which led to their success on the Board of Certification exam. These findings were supported by participant quotations. The implications of these findings are discussed in Chapter 5.

Chapter 5

Summary of Findings, Implications and Recommendations

It has been stated that the underlying premise of Peer-Assisted Learning (PAL) is that both the peer and mentee benefit from this interaction (Henning et al., 2008). The peer who is teaching gains a deeper understanding in the subject matter or clinical skill while the peer student feels comfortable with the peer-teacher. PAL has been widely studied in many allied health professions and the benefits include increased confidence in performing skills, decreased anxiety or stress when working with peers rather than clinical instructors, increased self-esteem, improved communication skills, improved test scores and course performance, increased critical thinking, enhanced learning of the material, and improved organizational skills (Buckley & Zamora, 2007; Burke et al., 2007; Cason et al., 1977; Field et al., 2007; Glynn et al., 2006; Heckmann et al., 2008; Henning et al., 2006; Henning et al., 2008; Iwasiw & Goldenberg, 1993; Kurtz et al., 2010; Mackey, 2007; Mackey et al., 2010; Nikendei et al., 2008; O'Moore & Baldock, 2007; Orsmond et al., 2000; Secomb, 2007; Stevens & Brenner, 2009; Topping, 1998; Weidner & Popp, 2007; Weyrich et al., 2009, Weyrich, Schrauth, & Nikendei, 2008).

A few researchers have investigated PAL in athletic training (Henning & Marty, 2008; Henning et al., 2006; Henning et al., 2008; Mackey et al., 2010; Marty et al., 2010; Morris, 2008; Odell, 2010; Weidner & Popp, 2007), however, no research has investigated how PAL curriculum contributes to the students' transition from an athletic training student to an entry-level professional. This study was the first in athletic training education to investigate, through the students' perceptions, if a PAL curriculum influenced the transition from an athletic training student to an entry-level professional.

A difficulty of studying the effects of PAL on athletic training graduates is that each institution implemented PAL in their distinct way. The students' perceptions of the PAL pedagogy and how it impacted them post-graduation thus was unique to their experience. All participants in this study did identify that their PAL pedagogy had an influence on their current practice as an entry-level athletic trainer. Athletic training graduates who had worked with their peers through content in athletic training during their clinical educational experiences saw benefits in their work settings. These benefits included improved communication skills and teaching skills, improved clinical decision making, improved confidence and socialization, and a deeper understanding of athletic training content which contributed to the student's success on the Board of Certification exam.

The purpose of this study was to explore the perceptions of students who had graduated from a purposefully-implemented PAL pedagogy and how this pedagogy influenced their transition from an athletic training student to an entry-level professional. This chapter will present a summary of research findings and a discussion of the themes. At the conclusion of this section implications and recommendations for further study will be proposed.

Findings

All participants in this study stated that they benefited from their PAL experience through their athletic training education. This is supported by literature from previous research that had investigated the benefits of PAL in health-related fields (Buckley & Zamora, 2007; Burke et al., 2007; Cason et al., 1977; Field et al., 2007; Glynn et al., 2006; Heckmann et al., 2008; Henning et al., 2006; Henning et al., 2008; Iwasiw &

Goldenberg, 1993; Kurtz et al., 2010; Mackey, 2007; Mackey et al., 2010; Nikendei

et al., 2008; O'Moore & Baldock, 2007; Orsmond et al., 2000; Secomb, 2007; Stevens &

Brenner, 2009; Topping, 1998; Weidner & Popp, 2007; Weyrich et al., 2009, Weyrich,

Schrauth, & Nikendei, 2008). However, most of the research that has been conducted

thus far has been on the immediate benefits from a PAL curriculum rather than looking at

long-term or post-graduation impact. This study investigated the students' experience

one to two years post-graduation from programs that implemented PAL in their

curriculum.

Improved communication skills. Research participants consistently stated

communication skills had the most impact on their practice as an athletic trainer. Athletic

trainers take on many roles while overseeing an athlete's medical care and therefore good

communication skills are vital. Certified Athletic Trainers must effectively communicate

with athletes, coaches, parents, athletic training students, team physicians, other allied

health care professionals, administrators and educators.

Formal education can only go so far in preparing students to communicate

effectively on their first jobs. A study (Massie et al., 2009) investigated the educational

preparation of athletic trainers who work in the clinical setting. Data were collected from

a questionnaire assessing each employer's satisfaction with an athletic training graduate's

preparation across the six domains of knowledge and skills established by the Board of

Certification. Results showed that whereas employers were satisfied with graduates'

technical skills they were less satisfied with the graduates' interpersonal and

communication skills. In another study (Schilling, 2011), which also looked at post-

graduates in clinical settings, graduates reported that they felt well prepared for the

clinical setting but stated they were weak in the areas of insurance and communication skills.

Through the study reported here, research participants stated that the PAL curriculum assisted in developing communication skills with not only allied health care professionals but also coaches, parents, athletes and fellow peers. Thus PAL may be able to impact the students as they transition to a professional role where they are required to communicate effectively with their sports medicine team.

Communication skills may have been impacted by other course material or content through the student's education, however the investigator believes that through the evidence provided in this study and support from other literature, a PAL curriculum can impact the student's communication skills. Participant 4 stated that:

> Just learning to communicate with someone and how to teach someone is different than teaching yourself, you are having to learn how to communicate effectively and I think that was really beneficial to be able to explain how things work and be able to explain to a younger student who is just learning.

Through a literature review, researchers have investigated PAL and determined that communication skills improve with PAL (Buckley & Zamora, 2007; Burnside, 1971; Flynn, Marcus, & Schmadl, 1981; Mackey et al., 2010; Kerr & MacDonald, 1997). In nursing education, Kerr and MacDonald (1997) investigated if students could effectively communicate health promotion to peers. The students took part in a creative course where they worked together through simulations. Results of the study did show that student's communication skills improved. Buckley and Zamora (2007) investigated the effects of a PAL program on the tutors. The study involved upper classman peer-tutors instructing underclassman in reviewing examination procedures of particular body systems. Buckley and Zamora found that participants who served as a peer-tutor

enhanced their skills for practical teaching, confidence with speaking to groups and communication skills. Mackey, Kamphoff, and Armstrong (2010) found similar results with a PAL pedagogy in which students developed better communication skills.

These studies demonstrate support for PAL as a useful tool in improving student's communication skills. While communication skills may have been impacted by other educational exchanges that occurred throughout the student's athletic training education, evidence that PAL can benefit students within their communication skills has been shown in many fields. As Massie and Strang (2009), and Schilling (2011) have demonstrated, graduates have felt that their educational preparation was lacking in development of their communication skills. The study reported here advances the research literature about PAL by following-up athletic training education program graduates one and two years after graduation.

Teaching skills. Athletic trainers are often called upon to teach athletes, coaches, parents, athletic training students as well as other allied health care professionals about athletic related injuries. Teaching goes beyond just informing others about diagnosis, treatment and rehabilitation plans. One study found that when medical providers discusses with their patients their diagnosis and treatment plans that the patient is educated which results in a positive effect on health outcomes (Kurtz, Silverman, Benson, & Draper, 2003). Teaching is often a part of an entry-level athletic trainer's job. However, during undergraduate education very little time is spent on developing athletic training students' teaching methods. Athletic training students are future educators and to fill this role effectively they must learn teaching methods. Athletic training instructors must look at pedagogical practices that provide teaching strategies students can use in

their future. Results of the study reported here demonstrated that research participants

learned valuable teaching skills as well as different learning styles through the PAL

experience. Several of the research participants stated the teaching skills gained through

their PAL experience not only carried over to their current practice with teaching athletic

training students they now supervise, but also teaching and working with athletes,

coaches and parents about athletic injuries.

Several studies have demonstrated that PAL can serve as a vehicle to help allied

health care students learn to teach (Aviram, Ophir, Raviv, & Shiloah, 1998; Buckley &

Zamora, 2007; Escovitz, 1990; Nikendei et al., 2008, Ross & Cameron, 2007; Silbert &

Lake, 2012). Escovitz (1990) used senior level medical students as clinical skills

teaching assistants to underclassman and found that the students became better teachers

through serving as teaching assistants. Aviram et al. (1998) demonstrated that through

peers serving as upperclassman coaches and mentors the research participants learned

instructional techniques. One study investigated a purposefully-implemented PAL

curriculum and found that peer tutors enhanced their personal teaching skills (Nikendei

et al., 2008). Silbert and Lake (2012) also demonstrated that when students serve as peer-

tutors in teaching clinical examination skills, the peer-tutors learned valuable skills and

experience in teaching. These studies demonstrate that when students peer teach they

gain valuable teaching skills (Aviram et al., 1998; Ecovitz, 1990; Nikendei et al., 2008;

Silbert & Lake, 2012).

Buckley and Zamora (2007) also found similar results. They discovered that

students who volunteered to serve as peer-tutors do so in part due to their desire to

improve their own teaching ability as well as their skills. Desire to improve teaching

skills was also evident in this study when Participant 12, who currently is serving as a

teaching graduate assistant, said that "I would hold tutoring sessions for them or review

sessions and come in extra hours and help them to study for practicals." This participant

was the only one with a primary role of teaching; the other 12 participants were working

with patient care as their primary role. While Participant 12 did show more interest in

volunteering for teaching roles in her undergraduate experience, the majority of subjects

in the study reported here stated that they currently had some involvement with teaching.

Their teaching was either with athletic training students, athletes, coaches, or parents. #

Teaching is an important skill for athletic trainers and is often not formally taught

in the classroom. With accreditation standards and institutional requirements, athletic

training programs are too pressed with classroom time as well as amount of credits to add

content in teaching methodology to the education of athletic trainers. As administrators

look for innovative techniques for athletic training students to gain valuable teaching

skills, PAL may be the program to add without straining faculty and clinical staff loads.

Incorporating teaching skills through a PAL curriculum may be beneficial for the student

whose first job may include supervising athletic training students. The study reported

here along with previous research supports the evidence that PAL can enhance valuable

skills in teaching.

Improved clinical reasoning. As athletic training students move through their

education which involves clinical experiences, they must transition from supervised

students to graduates who think independently and reason clinically. Geisler and

Lazenby (2009) states that clinical reasoning is when athletic trainers "make multiple

decisions based on myriad dimensions of knowledge and skill sets, the skillful gathering

of subjective and objective data, complex interactions with the patient, family members and other providers, and real-time problem solving" (p. 55). Athletic training educators must assist students to transition to clinically reasoning athletic trainers. Within the student's clinical experiences, a peer can assist them in problem-solving skills which facilitates critical thinking and clinical reasoning. There appears to be evidence that PAL may be a pedagogical tool that can help students clinically reason on their own as they become entry-level athletic trainers.

In reviewing literature, several articles have stated that through PAL students gain important critical thinking skills (Bos, 1998; Ladyshewsky, 2002; Shamir, Zion, & Spector_Levi, 2008). Ladyshewsky (2002) conducted a study in which the author investigated the effectiveness of peer coaching on physiotherapy students' clinical performance and clinical reasoning. It was discussed that students who were involved in peer coaching significantly outperformed students not involved in peer coaching in physical examination scores, communication and clinical reasoning. Bos (1998) also found that nursing students enhanced their critical thinking skills as well as depended less on their clinical instructors through collaborating in the clinical setting. A study in education also found that students developed a greater depth of critical thinking when involved in a PAL program (Shamir et al., 2008).

A way to help students organize their thoughts is to have them think aloud. During this process the students must communicate instructions, responses and thoughts to one another and PAL does this. Many of the research participants in the study reported here stated that through their PAL experiences, they would "bounce ideas" off each other which in turn assisted in their problem solving. Participant 3 said:

Talking it out loud with my peers kind of helps me now because I am able to run through some of the questions I may have missed in undergraduate I am now able to pick up on while evaluating an athlete or figuring out what kind of treatment protocol I want to go through with an athlete. I am able to kind of reason through that and remember things that I was learning from working with my peers and apply that now.

Through collaboration with peers which involved "bouncing ideas" off of each other, the research participants appeared to gain clinical thinking skills that they now utilize in their current employment. The findings of the study reported here which are supported in previous studies (Bos, 1998; Ladyshewsky, 2002; Shamir et al., 2008) demonstrate that PAL reinforces higher-order thinking and clinical reasoning and this carried over to their practice as graduates.

Improved confidence. Entry-level athletic trainers must be confident in their skills as they transition from completely supervised educational experience to independent health care practitioners who must be confident in their clinical decisions. Many of the research participants in the study reported here stated that they believed they were able to apply their skills with confidence in their current role as a result of their experiences in a PAL curriculum.

Through a literature review, there is evidence that demonstrates PAL improves students' confidence (Buckley & Zamora, 2007; Costello, 1989; Escovitz, 1990; Henning et al., 2006; Mackey et al., 2010; Kurtz et al., 2010; Scott, 2005; Vaidya, 1994; Weidner & Popp, 2007; Yates et al., 1997). Vaidya (1994) stated in their study on peer teaching that students reported a greater sense of self-confidence about their knowledge content and emotional and intellectual development as a result of being in the helper role. Mackey et al. (2010) stated that students believed PAL to have improved their confidence. Henning et al. (2006) found that students were more self-confident when

working with peers on clinical skills as compared to working with clinical instructors. In

nursing education, Costello (1989), Scott (2005) and Yates et al. (1997) all found that

when nursing students were in the role of a peer mentor, they had improved self-

confidence. When looking at communication, Buckley and Zamora (2007) found that

through serving as a peer-tutor produced improved confidence when speaking to groups.

Kurtz et al. (2010) found that when students presented a learned skill to their peers the

students develop the role of caregiver and increase their confidence within their skills.

Numerous studies have investigated the benefits of PAL in allied health fields and have

found that this pedagogy improves the student's confidence both for the student doing the

teaching as well as the peer-student.

The previous research supports the findings of the study reported here in which

participants stated that through their PAL experiences, their confidence as graduates in

professional practice had been positively impacted. Participant 4 explained that her

experience in PAL impacted her confidence in talking to her patients:

> It (PAL) helped me to be more confident in what I was doing and be confident
> when I was talking to an athlete and when I was on my own and just being able to
> explain to them what I was doing and what I was looking for and explaining
> injuries and stuff like that.

Athletic training education research has also investigated PAL. Weidner and

Popp (2007) investigated the effectiveness of a formal PAL pedagogy on performance of

psychomotor skills. They concluded that 44.4% of students within the peer-tutor group

had more self-confidence when practicing psychomotor skills with a peer-tutor. It

appears that as students collaborate within their clinical education and practice clinical

skills through PAL, they improve their confidence. The study reported here along with

the evidence provided from the research literature demonstrates that students engaging in a PAL curriculum can develop more confidence in their skills post-graduation.

Socialization. Six of the research participants in the study reported here stated that through the PAL experience they learned socialization skills as well as how to network with other allied health care professionals. Vaidya (1994) and Mackey et al. (2010) research supports this finding. Vaidya (1994) found that students improved socialization skills. Through their peer coaching students developed positive relationships. The author stated that through the peer coaching, students had to increase their interaction between themselves and their peers. Mackey et al. (2010) found through their study that participants developed stronger relationships with peers. Vaidya (1994) and Mackey et al. (2010) studies provide evidence that students who engage in a PAL curriculum develop valuable socialization skills.

In the study reported here it was evident that socialization was important to many of the participants. Research Participant 13 believed that his PAL experience assisted him in obtaining his first job through networking with his upperclassman peers once they were out in the workforce. Within PAL, students are required to interact with each other in a collaborative relationship as the peer teacher works with the underclassman peer in skills and content in athletic training. In the study reported here as well as the evidence provided from the literature demonstrates that a PAL curriculum can assist students in developing socialization skills.

Gained a deeper understanding of athletic training content which contributed to success on the Board of Certification exam. In the study reported here it was stated by many of the research participants that they developed a deeper

understanding of the athletic training content due to their PAL curriculum which contributed to their success on the Board of Certification (BOC) exam. To teach a peer effectively time is spent preparing and clarifying the material which in turn leads to deeper learning. As students work in collaboration through the peer learning, the student who is peer-teaching may gain a deeper understating of concepts. As has been previously mentioned with PAL, both the peer-teacher and peer-student benefit from this collaborative learning. Glynn et al. (2006) stated that PAL was a process of exchange and was recognized by both the student learners as well as student tutors. Within the PAL experience, the peer who is teaching gains a deeper understanding in the subject matter or clinical skill while the peer-student feels more comfortable with the peer who is teaching as compared to traditional teaching methods.

This benefit of a deeper understanding in content through PAL has been supported in education research as well as in allied health care professions (Annis, 1983; Benware & Deci, 1984; Peets, Coderre, Wright, Jenkins, Burak, Leskosky, & McLaughlin, 2009; Vaidya, 1994). Annis (1983) found that students who read material with the expectation of teaching it and then actually taught it to a peer scored higher on a general competence test as compared to a group who simply read material to be studied or another group who read the material with the expectation of having to teach the material to a peer but did not teach. Similar results were found by Benware and Deci (1984) in which subjects who learned thinking they would have to teach someone were more intrinsically motivated, had higher conceptual learning scores and perceived themselves to be more actively engaged with the environment as compared to the subjects who had learned in order to be examined. Both Annis (1983) and Benware and

Deci (1984) studies both show continued support for PAL as a pedagogy for increasing students learning through teaching.

Other studies have also found similar benefits for the students teaching peers. Vaidya (1994) found that peer teaching benefited both the student as well as the peer teacher. The author stated that the peer-teacher reported a better understanding of the subject matter and more interest in the subject. Through the study, participants also showed long term retention of what was learned. This study demonstrates significant cognitive gains for the peer-teacher. Peets et al. (2009) found that medical students who were involved in teaching small group sessions improved their knowledge acquisition and retention.

Vaidya (1994) also found that research subjects felt that remembering and using learning depends upon restructuring and relating the material to other meaningful experiences. As a peer teaching another peer, the research participants would often organize and reorganize their own learning in order to explain it to a peer. Participants in the study reported here stated similar findings regarding their PAL experience. Participant 3 mentioned that "when you learn something and read it in the book, it is different than when you do it and learn more about it and then you go and teach it you fully understand what concepts you are trying to grasp." It was also stated by Participant 12 that through the PAL process she had to look at things differently; she had to "look at it from their perspective too. It helped reinforce those proficiencies in my head as a senior."

Research Participant 3 stated that "I think it helped to deepen my knowledge of the subject matter that we were learning," while Participant 6, when asked to clarify how

PAL had affected her current clinical skills stated "you have to be able to explain it, so being able to explain what you are doing helps to actually realize and understand what you are doing. I think peer mentoring helped in that aspect." In the study reported here, 10 of the 13 participants stated that the PAL curriculum had impacted their current practice as an athletic trainer and through this teaching strategy they had gained a deeper understanding of athletic training content.

Findings from the study reported here in which students gained a deeper understanding of the athletic training content is supported in the literature (Annis, 1983; Benware & Deci, 1984; Peets et al., 2009; Vaidya, 1994). Education research has stated that the underlying premise behind a student teaching another peer is that the student who teaches gains a deeper understanding in the subject matter or clinical skill, because the process of teaching inherently requires a deepening of knowledge (Vaidya, 1994) which has been demonstrated through this study. As the ancient Japanese proverb says "to teach is to learn."

Result of a deeper understanding of the content led to the research participants' success on the BOC exam. Almost half of the research participants in the study reported here felt that their PAL experience contributed to their success on the BOC exam. The participants said that during the PAL experience they had to review information with each other and Participant 4 stated that this experience was the key to his success on the exam. Within the interview process, success on the exam was not defined. Therefore how each participant interprets success may be different. To be successful on the exam would imply that the candidate sitting for the exam passed the exam. The investigator did not ask how many attempts it took for the research participants to pass the exam. The

interview subjects stated, through the interview process, that the PAL experience helped them prepare for the BOC exam. A follow up question from this response, by the investigator, was if the subjects felt that PAL contributed toward their success on the exam. Half of the research participants stated that PAL did impact their success on the BOC exam. Through a literature review, there is evidence that in allied health fields, students obtain higher scores when taught with a PAL curriculum as compared to other pedagogy (Burke et al., 2007; Carr, Volberding, & Varkiman, 2011; Heckmann et al., 2008; Henning et al., 2008; Iwasiw & Goldenberg, 1993; Odell, 2010; Weyrich et al., 2009; Wong, Waldrep, & Smith, 2007).

Iwasiw and Goldenberg (1993) conducted a study that demonstrated students taught by their peers had significantly higher cognitive test scores on a surgical dressing procedure. Burke et al. (2007) also found similar results when investigating PAL trained students with a musculoskeletal system examination. Students who were instructed through PAL techniques stated they benefitted from this technique. Data demonstrated that 93% of the PAL-trained students passed the musculoskeletal system examination as compared to 67% of those participating in the traditional curriculum approach.

Carr et al. (2011) conducted the first study in athletic training education to investigate peer-tutors and peers on performance of specific psychomotor skills. Peer-tutors were randomly assigned to one of four groups; PAL only, PAL and the focused review session, focused review session only, and a control group. Results suggested that PAL may have a positive effect by increasing peer-tutors skill performance. The authors concluded through this study that peer-tutor review sessions have more of an effect on student learning than peer interaction.

Weyrich et al. (2009) also found similar results when comparing tests scores over three experimental groups: a PAL group in which skills lab training was assisted by a senior-student tutors; a faculty-led training group in which training was assisted by consultants in internal medicine with experience as skills lab teachers; or a control group in which no skills lab training took place. The students were tested on injection techniques and data supported that students were as successful on the exam as compared to faculty-led group, and significantly more successful than the control group. The authors were able to conclude, within a skills laboratory setting, PAL is a successful method of learning and that it can be just as effective as faculty-led training. In contrast to Weyrich et. al. (2009) results, Heckmann et al. (2008) found that students participating in the peer-tutor group scored slightly higher on a written test as compared to a control group taught by postgraduate tutors. While data to support PAL-led review over faculty-led review for the purpose of examination success is still limited, education administrators cannot overlook the previous mentioned data that showed success with PAL added to a traditional curriculum and its impact on test results (Burke et al., 2007; Carr et al., 2011; Iwasiw & Goldenberg, 1993).

Presently there have only been two studies that have investigated if PAL has an impact on the medical or board exams (Odell, 2010; Wong et al., 2007). Odell (2010) investigated if students who participate in a PAL curriculum have greater success in passing the BOC exam. The author attempted to gather data on first time pass rate of graduates from Program Directors. However, the Program Directors were unwilling to provide these data to the researcher and her results were statistically insignificant due to a lack of data to compare programs that implemented a PAL curriculum as compared to

those who did not participate in PAL. Wong et al. (2007) investigated peer teaching in medical schools and gathered data to investigate if students that took part in peer-teaching had academic improvement as compared to students that did not participant in peer-teaching. Data collected included United States Medical Licensing Examination (USMLE) scores and final medical school GPA. Results demonstrated that students who took part in the peer-teaching had significantly higher USMLE scores and final medical school GPA's as compared to non-peer-teaching students. This study in contrast to Odell (2010) demonstrates that students who participant in peer-teaching benefit on Board exams.

The study reported here demonstrates that a PAL pedagogy could be a useful aid toward successful completion of Board exams. This has been supported through the literature (Burke et al., 2007; Carr et al., 2011; Heckmann et al., 2008; Henning et al., 2008; Iwasiw & Goldenberg, 1993; Odell, 2010; Weyrich et al., 2009; Wong et al., 2007). As athletic training students work with their peers in teaching and learning the previous data have demonstrated that they benefit in understanding the content better, and review the material which in turn leads to success on the Board of Certification.

Recommendation for Practice

Based on the findings of the study reported here, the investigator concludes that a PAL curriculum positively influences athletic training students' transition to an entry-level professional. In general, the results demonstrate that PAL influences the graduates through improved communication skills, teaching skills, clinical thinking, improved confidence, socialization, and gaining a deeper understanding of athletic training content

which leads to success on the BOC exam. Previous research supports these findings in allied health fields as well as in education.

The investigator believes that the greatest impact that a PAL curriculum may have on students post-graduation is the teaching component. The other themes that came from this study could potentially be impacted through other course work, assignments or curricular design. But the teaching skills that the students stated they gained through their PAL experience is not a current required content area as stated by the Commission on Accreditation of Athletic Training Education (CAATE). Athletic training programs are not required to implement teaching methods into their curriculum. Athletic trainers naturally have teaching involved in their jobs when working with athletes, coaches, administrators, athletic training students and educators. Education courses are nonexistent in the preparatory curriculum of allied health care fields including athletic training. Many entry-level athletic trainers are expected to step into roles where they are supervising and overseeing athletic training students. Administrators assume that these entry-level professionals know how to teach, and they are given responsibilities routinely without training or meaningful review.

Entry-level athletic trainers need to be adequately prepared to step into these roles as a teacher, educating their patients about their injuries and treatment plans as well as when they supervise athletic training students in their clinical educational experiences. Currently, Program Directors are filling the maximum amount of credit hours with the current CAATE standards, which do not include teaching. However, as research by Kurtz et al. (2003) demonstrated, when medical providers teach their patients about their diagnosis and treatment plans, the health outcomes of the patient are more often positive.

There has also been a push in the medical field to incorporate teaching for medical students as a result of the United Kingdom's General Medical Council (GMC) statement that medical graduates must "be able to demonstrate appropriate teaching skills" (GMC, 2003). However, many institutions don't have the financial support to add more faculty and instructional resources to incorporate teaching into allied health medical education. Therefore, faculty and administrators must look at creating new educational environments which can be delivered at a lower cost. Athletic training educators must be continuously researching pedagogical tools that provide evidence that their respective teaching method positively affects the athletic trainer students. A PAL curriculum in which peers collaborate together within their clinical education could benefit the peer-teacher with gaining valuable teaching skills.

The investigator was surprised to find that many of the participants stated that their PAL pedagogy had an impact on their BOC exam. No interview questions asked about the Board exam but 6 of the 13 participants did state that PAL influenced their scores. Presently the CAATE is requiring all athletic training education programs to publish data on first time passing rates. With the new standard, programs are required to demonstrate a first time aggregate passing rate of 70% on the BOC Exam. With these changes, athletic training education administrators are looking for evidence of what teaching methods are effective in helping to prepare students for success on this Board exam. There could be many factors that contribute to a student's success; however, with this study's results and data from other research on PAL, athletic training administrators have some evidence that PAL could help students within obtaining valuable skills that may be missed in the traditional curriculum.

As there is a push in the athletic training profession to be committed to evidence-based practice both within clinical and teaching settings, athletic training educators need to continue to pursue pedagogical research that will ensure their teaching strategies are meeting the needs of students as they enter into the varying workforce. This study was the first to investigate how PAL impacted the students once they were out practicing as an entry-level athletic trainer.

This research demonstrates that students are positively impacted by a PAL curriculum. Athletic Training Education Programs should practice with PAL to determine what works best for their students and institution. Program Directors could incorporate PAL throughout the curriculum, both within the clinical education, lab courses and in existing courses. Based on the findings from the literature on PAL reported in Chapter 2 and Chapter 5 as well as the findings of this study, the investigator believes that participating in a formalized PAL program may contribute to the athletic training student's development as an entry-level professional after graduation. The benefits of PAL curriculum as seen by the investigator is in providing an introduction to teaching through collaborating with peers and learning to think critically and communicate effectively once out practicing as an athletic trainer.

Limitation

Limitations of this study were that the investigator could not verify the experiences that the students had with PAL, interviewing over the phone rather than through face-to-face interaction, and the small subject size. This study involved interviewing participants from varied athletic training education programs. The investigator was unable to verify that each participant had roles of the peer-student and

peer-teacher. Only two subjects stated there was no educational content that was discussed within their PAL experience. All other research participants stated that they collaborated with their peers and gained valuable teaching skills through their PAL experience. The majority of the subjects did state that through the PAL curriculum they did engage in forms of peer interaction where they learned from each other. All subjects graduated from different programs and how they implemented PAL varied which also results in varying ways that PAL impacts the student's post-graduation.

Another limitation of this study was the investigator's experience conducting phone interviews. The investigator did learn from the pilot-study regarding ways to phrase questions as well as word choice in the interview process. However, the investigator still felt that attempts to draw more detail to the interviewees' descriptions regarding their PAL experience made it more apparent regarding the researchers' lack of experience in this area.

The small subject size was also a limitation of this study. The investigator conducted the phone interviews in May and June which may have resulted in a decreased response rate since many potential participants may have been transitioning from college to new employment or have just completed their semester at school. However, from the lower subject pool the investigator still found consistent findings and reports from the 13 subjects.

Some subjects did mention limitations with PAL. A few research participants stated that they often received varied responses to the same question when asking several of their peers and some stated they received wrong information. One subject mentioned that their education was their responsibility and felt that students should still verify peers'

answers by looking it up to ensure that they received the correct answers. When students serve as peer-teachers they must still recognize that they are young in their career and must realize they are not yet professionals. Often the research participants stated they were asked questions from their peers that they were unsure of or they didn't know the answer. These situations created a learning environment for both the student and peer-teacher as they collaborated to discover the answer and benefits of PAL outweighed limitations.

While each experience may have been unique for the particular research participant, within all the interviews the participants stated they perceived that they benefitted from the PAL experience. In a final response from many of the subjects, when they were asked if there was anything else they would like to discuss about their experience, they stated that they would recommend athletic training programs to implement PAL.

Recommendations for Future Study

This study was the first to investigate students' perceptions of a PAL curriculum post-graduation and how it impacted them in their current jobs. Evidence gathered demonstrated that this pedagogy does impact the students within their first two years post-graduation; however, additional studies in athletic training should be conducted investigating PAL and how this pedagogical tool benefits students as they transition into entry-level professional jobs, especially since the number of subjects in the studies was small. As athletic training educators, we must be continuously researching pedagogical tools that provide evidence that the teaching method positively affects the certified athletic trainers. The following areas should be considered for further research:

1. Future researchers might consider investigating how PAL impacts students who work in different athletic training settings such as comparing clinical settings, as compared to high schools and colleges. These different settings require slightly different roles as an athletic trainer. In the study reported here, research participants were presently employed at a variety of settings.

2. Quantitative studies to demonstrate how PAL impacts first time pass rate on the Board of Certification exam should be investigated. Now that the CAATE is requiring programs to publish their first time passing rate, researchers should be able to gather better data to see if there is a difference in passing rates for programs that implement PAL as compared to programs that do not. Odell (2010) attempted to gather some data on the first time passing rate of programs that implement a PAL curriculum; however the Program Directors were unwilling to provide this information for her study. Perhaps this information will be more available in the future. Further research investigating the effect of PAL on passing rate could be helpful as Program Directors continue to integrate new strategies into their programs to assist in improving student's success on the Board of Certification exam.

3. Continued research is always needed on what teaching methods can contribute to students gaining experience and skills in teaching.

There are many articles that discuss implementation strategies for programs looking to develop a PAL curriculum. Research does show that when PAL is purposefully implemented and peer-teachers are educated in teaching strategies, students have better PAL experiences (Burke et al., 2007; Field et al., 2007; Heckmann et al.,

2008; Nikendei et al., 2008; Weyrich et al., 2009; Weyrich, Schrauth, & Nikendei, 2008).

Weyrich, Schrauth, Kraus, et al. (2008) developed training sessions for their peer-tutors

and concluded that "sufficient tutor training and preparation is crucial for the success of

peer teaching models" (p. 7). Training for the peer-teachers could take place early in the

students' athletic training education. Programs considering the development of a PAL

curriculum could embed components throughout both the didactic and clinical

educational experiences. However, as has been demonstrated through the research in

other allied health fields, when PAL is intentionally planned and implemented with PAL

training sessions, both the tutor and peer may see benefits from this pedagogy.

Athletic Training Education Programs should continue to evaluate their PAL

implementation to see what works best for them. When developing an implementation

framework for PAL, review sessions can be developed from existing course materials,

peer assignments can occur by design or happen naturally based upon the scenario, and

outcome measures can be easily identified and captured to help determine what is

working and what needs to be refined. How we as educators in athletic training

education can incorporate quality hands-on educational experiences may still be

debatable but studies demonstrate that a PAL curriculum may be a tool that can assist

students from transitioning to athletic training student to entry-level professional. In

conclusion, as Participant 2 stated that:

> For schools that don't currently have peer mentoring, they should. Having the
> opportunity to associate and learn alongside fellow students is irreplaceable and
> the skill they will gain is crucial. It's one thing to actually learn in the classroom
> but when you can actually practice it and use the skills hands on that you've
> learned in the class will be the most beneficial.

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Appendix A

E-mail to Program Directors

E-mail to Program Directors in August 2011:

I am a doctoral student at the University of Nebraska Lincoln and working on putting together my dissertation topic. I'm looking for ATEP's that involve Peer-Assisted Learning within their curriculum (whether clinical education or in the didactic component). Peer-Assisted Learning (PAL) was defined by Henning, Weidner and Jones (2006) as the "process of gaining knowledge, understanding, or skill in athletic training-related tasks among students who are at either different or equivalent academic or experiential levels through instruction or experience." PAL involves teaching by and through the peer, learners are active equal partners, students are self-directed. Within PAL, the student who teaches gains deeper understanding within the clinical skill or subject matter. This occurs since the peer who is teaching needs a deeper understanding of the knowledge or task.

I am currently attempting to compile initial information regarding number of programs that that require a PAL component within their ATEP. **I am asking that you respond to this e-mail with a yes or no that you include PAL and require it within your ATEP.**

I appreciate your time and hope you are enjoying that last few days or hours of summer before fall classes begin.

Reference:

Henning JM, Weidner TG, Jones J. Peer-assisted learning in the athletic training clinical setting. *J Athl Train*. 2006; 41(1): 102-108.

Dana Bates
Instructor and Assistant Athletic Trainer
Athletic Training Education Program
Whitworth University
300 W. Hawthorne
Spokane WA 99251
509-777-3244

October, 2011 e-mail to program directors of ATEP's that utilized PAL:

       I am a doctoral student at the University of Nebraska Lincoln and working on finalizing my proposal. I am investigating Peer-Assisted Learning (PAL) in athletic training education, specifically programs that intentionally implement this pedagogy. I had e-mailed you back in the summer regarding PAL and you had responded stating you did utilize this in your curriculum. I am inquiring if you would provide graduate contact information to the principal researcher in order to conduct phone interviews on graduates from intentionally implemented PAL programs?

Thanks for your time.

Dana Bates
Athletic Training Education Faculty
Assistant Athletic Trainer
Whitworth University
300 W. Hawthorne
Spokane WA 99251
509-777-3244

May 2012 e-mail to Program Directors in attempt to increase participant pool:

I am e-mailing you to ask for you permission to include your athletic
training 2010 and 2011 graduates in a study I'm conducting on
Peer-Assisted Learning (PAL) in athletic training education. My
specific research question:

How do graduates of a purposefully-implemented PAL pedagogy perceive
that this pedagogy influenced their transition from athletic training
student to performance as an entry-level athletic trainer?

This study has been reviewed and approved by the University of
Nebraska Lincoln Institutional Review Board and you can contact them
with questions via 402-472-6965. I will conduct phone interviews of
the subjects in June 2012. Interview participants will not be tracked
back to your program, information will be kept confidential. If you
give permission to use your graduates I will send you an e-mail to
forward to 2010 and 2011 graduates who are currently practicing as an
athletic trainer.

Your response to this e-mail is greatly appreciated. If you have
further questions I am more than happy to address these through e-mail
or a phone call. Thanks and hope your finals and close to the
semester are going well.

Sincerely,
Dana Bates
University of Nebraska Lincoln Graduate Student and
Athletic Training Education Faculty
Assistant Athletic Trainer
Whitworth University
300 W. Hawthorne
Spokane WA 99251
509-777-3244

Appendix B

IRB Approval Letter

UNIVERSITY OF Nebraska
Lincoln

COLLEGE OF EDUCATION AND HUMAN SCIENCES
Department of Educational Administration

June, 2012

Investigating post-graduate athletic training education student perceptions following a purposefully implemented peer-assisted learning pedagogy

Purpose of Research:

Peer-assisted learning (PAL) has become widely recognized in education as well as in medical health fields of dentistry, nursing, occupational therapy, and physical therapy. Research has demonstrated numerous benefits within PAL in clinical education. Although PAL has been documented as a useful pedagogy in many allied health professions for numerous reasons, little is known and researched about PAL in athletic training education and the effects within post-graduate job placement. The purpose of this study is to explore how intentional PAL pedagogy within undergraduate athletic training clinical experiences affects students post-graduation.

I am inviting you to participate in a study due to your experience with PAL in your undergraduate education. You have been invited to participate since you took part in a planned PAL curriculum in your undergraduate education. Participation in this study will take 30-60 minutes of your time. The principal investigator will interview you via the telephone at a convenient time for you during the summer of 2012. Your responses will be kept anonymous through assigning you and identification number. Data will be locked in a filing cabinet in the principal investigator's locked office. We may publish a summary of everybody's responses or present such a summary at a national meeting, but your identity and your responses will be kept anonymous.

There are no known risks to your involvement in this study and your participation is voluntary. You are free to decide not to participate in this study. You can also withdraw at any time without harming your relationship with the researcher, Whitworth University, the University of Nebraska-Lincoln, or your institution. This study will directly benefit athletic training students as we look to make continued improvements to student's clinical educational experiences. You will receive a gift card of the amount of $25 at completion of this study as a token of appreciation for your time within the study. If you have any questions regarding this study please don't hesitate to call the principal investigator at 402-430-1847 or through e-mail at batesdanaatc@gmail.com. If you have questions concerning your rights as a research subject that have not been answered by the investigator or to report any concerns about the study, you may contact the University of Nebraska-Lincoln Institutional Review Board, telephone 402-472-6965. Your signature certifies that you have decided to participate having read and understood the information presented. You will be given a copy of this consent form to keep.

_____ Yes, I would like to participate in the study.
_____ No, I do not want to participate in the study.

_____   _____
Signature of Subject   Date

Name and phone number of investigators:
Principal Investigator: Dana Bates, MS, ATC, 402-430-1847, e-mail: batesdanaatc@gmail.com
Secondary Investigator: Dr. James O'Hanlon, 402-472-5310, e-mail: johanlon1@unl.edu

Appendix C

E-mail to Potential Participants

This was the initial e-mail notice that was sent via e-mail by Program Directors to potential participants:

Please e-mail the request found below to your 2010 and 2011 graduates for a study investigating post-graduate perceptions of Peer-Assisted Learning. Please only send to those graduates who are presently practicing as an Athletic Trainer. Your assistance is greatly appreciated and if you could promote and encourage your graduates to participate it would be very helpful. The participants will forward their contact information to the principal investigator, Dana Bates.

I am an e-mailing you to request your participation in an important study regarding your athletic training programs use of Peer-Assisted Learning in your undergraduate education. Through your participation in a phone interview you will provide valuable feedback regarding your experience with Peer-Assisted Learning and its impact post-graduation. This information will benefit future athletic trainers as we investigate curriculum that can directly impact students' transition to entry-level professional. Your participation in the study is voluntary.

Your program director is e-mailing you to ask for your participation in this study. If you are interested please forward your contact information, e-mail and phone number, to the principal investigator, Dana Bates at batesdanaatc@gmail.com. Your identity and school affiliation will be kept anonymous. Your participation in the study is voluntary and you may withdraw and stop participation without penalty. The principal investigator will conduct a phone interview with you at a convenient time in May-June 2012 which should take 30-60 minutes. Upon completion of the study you will be mailed a $25 Gift Card as thanks for your participation.

If you have any questions about this interview regarding Peer-Assisted Learning, please call Dana Bates, the principal investigator, by telephone at 402-430-1847 or by email at batesdanaatc@gmail.com or Dr. James O'Hanlon, secondary investigator, by telephone 402-472-5310 or by e-mail at johanlon1@unl.edu. This study has been reviewed and approved by the University of Nebraska Lincoln Institutional Review Board and you can contact them with questions via 402-472-6965. Again, upon completion of this study you will receive a $25 dollar Gift Card. Thank you in advance for your willingness to share your experiences and opinions regarding your involvement with Peer-Assisted Learning in your athletic training education.

Sincerely,

Dana Bates
Principal Investigator
Graduate Student
University of Nebraska-Lincoln

#

This is the second notice that will be sent to Program Directors to then forward to potential research participants:

Please forward the statement below to your 2010 and 2011 graduates for a study investigating post-graduate perceptions of Peer-Assisted Learning. This is a second e-mail attempt. Please only send to those graduates who are presently practicing as an Athletic Trainer. Your assistance is greatly appreciated and if you could promote and encourage your graduates to participate it would be very helpful as I'm working toward a subject pool of 15 graduates. The participants will forward their contact information to the principal investigator, Dana Bates.

Dear 2010 and 2011 Graduates:

I know this is a busy time of year for athletic trainers and I would like to take a few minutes of your time to collect some information regarding your involvement with Peer-Assisted Learning (PAL) in your undergraduate athletic training. My name is Dana Bates and I am a doctoral candidate at the University of Nebraska at Lincoln in Educational Administration. Through your completion of this study I will send you a $25 Gift Card. Please send me your name and phone number either through text (402.430.1847) or through e-mail (batesdanaatc@gmail.com) demonstrating your willingness to participate in this study.

Phone interview dates and times will be scheduled at your convenience and it should take no longer than thirty minutes of your time. Your response is voluntary and I am not asking for any other demographic information that could tie you to a particular interview or program. If you have any questions about this interview of PAL, please call Dana Bates, the principal investigator, by telephone at 402-430-1847 or by email at batesdanaatc@gmail.com. This study has been reviewed and approved by the University of Nebraska Lincoln Institutional Review Board and you can contact them with questions via 402-472-6965. Upon completion of this study you will receive a $25 Gift Card as appreciation.

Sincerely,

Dana Bates
Doctoral Candidate
University of Nebraska-Lincoln

Third and final e-mail that was sent to Program Directors to then forward to potential research participants:

Please forward the statement below to your 2010 and 2011 graduates for a study investigating post-graduate perceptions of Peer-Assisted Learning. **This is a third, and final e-mail attempt**. Please only send to those graduates who are presently practicing as an Athletic Trainer. Your assistance is greatly appreciated and if you could promote and encourage your graduates to participate it would be very helpful as I'm working toward a subject pool of 15 graduates. The participants will forward their contact information to the principal investigator, Dana Bates.

Dear 2010 and 2011 Graduates:

We understand that summer is a busy for athletic trainers. We are hoping that you can give thirty minutes to complete a phone interview to answer some questions regarding your experience with Peer-Assisted Learning or Peer-mentoring in your undergraduate education. Through your completion of this study I will send you a $25 Gift Card. Please send me your name and phone number either through text (402.430.1847) or through e-mail (batesdanaatc@gmail.com) demonstrating your willingness to participate in this study.

Thank you in advance for you participation in this study, each of your responses are very important to us. If you have any further questions please don't hesitate to contact me.

Sincerely,

Dana Bates

Doctoral Candidate

University of Nebraska-Lincoln

Appendix D

Interview Script

Interview Script

    Thank you for taking the time for this interview. My name is Dana Bates, the principal investigator conducting a study on Peer-Assisted Learning in athletic training education. This information you will provide today will help clarify how PAL in your education impacted you post-graduation. Before we move into the interview let's review the informed consent form you signed prior to this interview.

     [DISCUSS PURPOSE OF THE STUDY, PROCEDURES, RISKS AND/OR DISCOMFORTS, BENEFITS, CONFIDENTIALITY]

    Do you have any questions?

[ALLOW TIME FOR QUESTIONS]

    We will now begin the interview which is being recorded. Do not hesitate to stop me at any point throughout the interview to ask questions or to ask me to clarify.

    [INTERVIEW]

    This concludes the interview, thank you for your time and answers. Do you have anything else you'd like to tell me? Can I contact you again if I want to ask you a few follow-up questions?   Please do not hesitate to contact me with any questions.

Appendix E

Interview Questions and Protocol

Interview Protocol

Time of interview:
Date:
Place:
Interviewer:
Interviewee:
Position of interviewee:

Interview questions:

1. What terminology was used at your institution to describe the learning amongst your peers?

    a. What wording was used (PAL, peer-tutor, peer mentoring…)

        i. Peer-modeling: process by which students pattern their thoughts, beliefs, strategies, and actions after those who demonstrate targeted actions, verbalizations, and expressions

        ii. Peer assessment: an instructional technique in which a student judges the level of quality of a peer's understanding and provides corrective comments to improve the execution of tasks

        iii. Peer mentoring, a supportive relationship between 2 students of differing academic or experience levels within the professional program with a focus on acquiring norms, values, knowledge, and skills to function as a future professional

        iv. PAL process of gaining knowledge, understanding, or skill in athletic training from students who are at different or equivalent academic or experiential levels.

    b. How was PAL implemented at your school?

        i. Were you a ever taught by an upperclassman, were you ever that upper classman assisting an underclassman

2. Describe your thoughts regarding this educational exchange with peers in your athletic training education?

    Probes: as a peer-student, or peer-tutor?

3. What makes learning from your peers effective?

Are there limitations to learning from your peers and if so what are they?

4. How would you describe your experience serving as a peer-tutor?

   Probes: confidence, clinical skills, clinically thinking, can you clarify?

5 What benefits did you gain from these peer interactions?

6. Did your participation in this peer interaction impact your current practice as an athletic trainer?

   a. You mention benefits you perceived from PAL above, did these carry over to your current practice?

7. In what ways did serving as a peer-tutor prepare you within skills necessary for your first job/graduate work post-graduation?

   Probes: can you elaborate, give an example?

   Clinical thinking, clinical reasoning, differential diagnosis, clarify?

8. Can you explain how PAL may have impacted you in your first job/graduate   work post-graduation?

   Prove: can you elaborate, in what ways, give an example?

9. Is there anything else that you'd like share with me regarding PAL?