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CLINICAL INSTRUCTORS PERCEPTIONS OF THE PTA-CPI ASSESSMENT OF  
CRITICAL THINKING

A Thesis Submitted to the Graduate School  
in Partial Fulfillment of the Requirements  
for the Degree of  
Master of Science

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Pittsburg State University

Pittsburg, Kansas

December 2016

CLINICAL INSTRUCTORS PERCEPTIONS OF THE PTA-CPI ASSESSMENT OF  
CRITICAL THINKING

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## ACKNOWLEDGEMENTS

I would like to show my gratitude for the following individuals and their valuable contributions to this project.

First, my husband Pete. You are continually supportive and patient to my ambitions. You give stability to our home and an unprecedented amount of grace as many household responsibilities were overlooked and undone due to my vigorous work in research.

My children, Austin, Jacob, and Jenna. Each of you have willingly yielded your support in various ways; whether it was financially, adjusting your schedule, or accommodating to give me quiet, uninterrupted time and space; know that I value your contributions immensely.

My thesis advisor, Dr. Julie Dainty, and committee members Dr. Greg Belcher, and Dr. Kristi Frisbee. Your wisdom kept me focused and your guidance kept this project directed to completion. Your feedback was valuable and I genuinely received it with eager anticipation. I easily learned to trust your opinions, knowing you all operate under the best intentions.

Dr. Janet Zepernick, Director of the Writing Center at Pittsburg State University, shared her expertise in qualitative data. I am grateful for her knowledge and willingness to help. Also, the Writing Center employees who transcribed several hours of recorded interview data. Their tireless work provided a critical data base of data collection.

There are countless teachers, past and present co-workers, and people who have indirectly contributed to this project. To explore the topic of critical

thinking, I have made nothing but positive gains the a spiritual, self-improvement realm.

Finally, I want to thank my parents, Val and Caroline Clark. My mom's diagnosis of Alzheimer's during this research has been difficult, as I witnessed her critical thinking diminish. However, my dad's critical thinking abilities have increased in ways that show an authentic love in his new found care giving role. Through his demonstration I was able to connect the importance of the affective domain of Bloom's Taxonomy with one's ability to critically think.

Thank you Father.

# CLINICAL INSTRUCTORS PERCEPTIONS OF THE PTA-CPI ASSESSMENT OF CRITICAL THINKING

An Abstract of the Thesis by  
Trudy L. Hansen

The purpose of this study was to analyze how critical thinking skills are assessed for Physical Therapist Assistant students within the state of Kansas. Eight face to face interviews were conducted with clinical instructors who use the Physical Therapist Assistant Clinical Performance Instrument (PTA-CPI) as the instrument to assess critical thinking. Physical Therapy educational facilities supplied the names of clinical instructors who met the study's criteria. Clinical instructor's gave their definition of critical thinking, stated the advantages and disadvantages of the PTA-CPI, described their perceptions of a PTA student's critical thinking skills in the clinical educational setting, and discussed what they perceived as an adequate length of time for a PTA student to develop and assess critical thinking in the classroom as well as the clinical educational setting.

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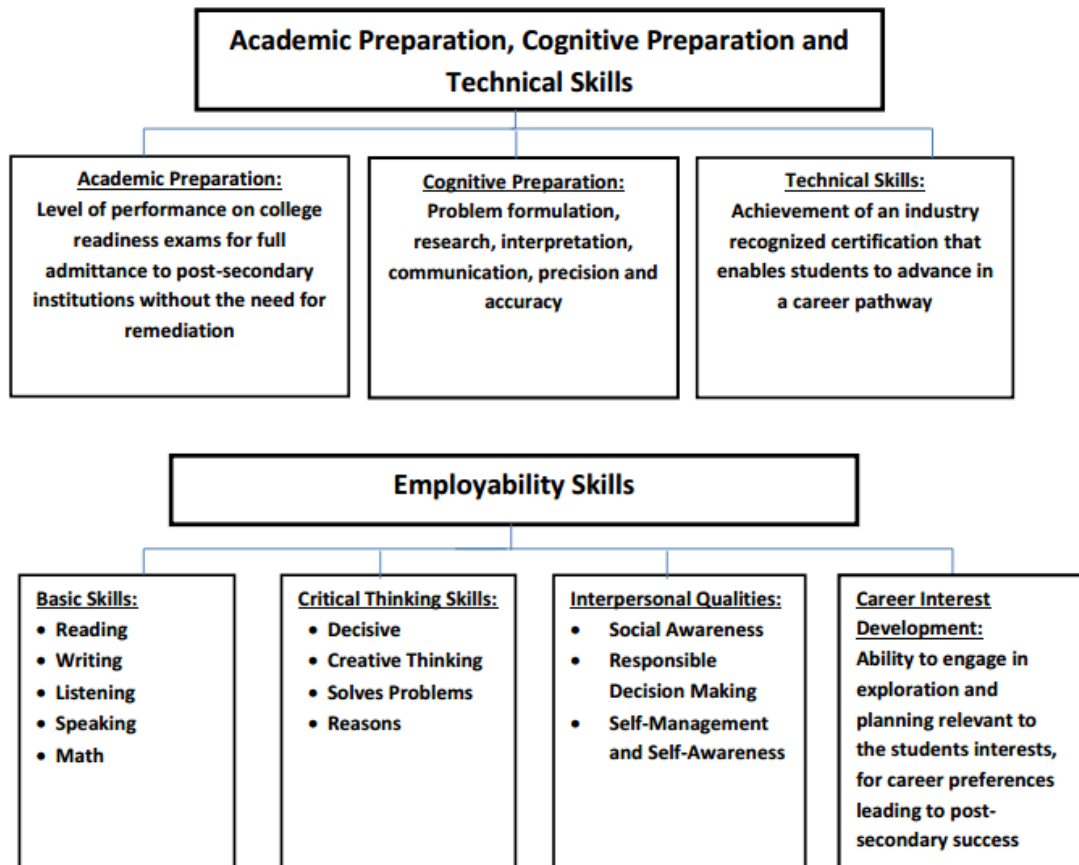
## **CHAPTER I**

### **INTRODUCTION**

#### **Background**

The Kansas Department of Education (KSDE) identifies a student to be college and career ready once the student has had “the academic preparation, cognitive preparation, technical skills, and employability skills to be successful in postsecondary education, in the attainment of an industry recognized certification or in the workforce, without the need for remediation.” (KSDE, 2013). Table 1 represents the categories for a student to be considered college and career ready. The category of Employability Skills is subdivided into four sections: 1) basic skills; 2) critical thinking skills; 3) interpersonal qualities; 4) career interest development. This research focuses on critical thinking skills.

Figure 1.1. College and Career Ready



*Figure 1.1.* “College and Career Ready means an individual has the academic preparation, cognitive preparation, technical skills, and employability skills to be successful in post-secondary education, in the attainment of an industry recognized certification or in the workforce, without the need for remediation. Adapted from “Kansas College and Career Ready,” by the *Kansas Department of Education*, p. 1. Copyright 2013 by the Kansas Department of Education.

The National Career Technical Education Foundation has structured 16 Career Clusters in the National Career Clusters Framework, which represents close to 80 career choices from which a student can choose from. There are specific academic and technical skills in which all the career choices represented require a basis foundation from the Career and Technical Education (CTE) student. A study aimed at how critical thinking is assessed in all 16 career clusters would be lengthy and time consuming. Also the field of technology rapidly changes. For the sake of clarity and resources, this study focused on

the Health Science career cluster, specifically the Physical Therapist Assistant (PTA) Programs within the state of Kansas. Critical thinking skills are a core component in administering patient care safely. It is necessary for PTA students to use a mechanism for making good choices and problem solving skills that successfully effect how they respond to important life decisions, and react in various situations.

With the PTA Program being a CTE program, a potential student can begin the PTA career pathway while in high school. Once the student is accepted into a PTA program they could be as young as eighteen years old (PTA Handbook, 2014). Herein lies the focus for secondary and post-secondary educators to examine critical thinking skills in students.

Accrediting bodies, state and federal agencies, school systems in secondary and post-secondary, and business and industry require CTE students to have a foundation of critical thinking knowledge and skill. Looking specifically at the CTE program of PTA, the Commission on Accreditation in Physical Therapy Education (CAPTE) Evaluative Criteria Physical Therapist Assistant Programs the method in which to teach critical thinking is specified as the didactic method in the Comprehensive Curriculum section 3.3 (2014).

When trying to assess a student's critically thinking capabilities there is not an objective, unified tool to provide a well justified assessment. Neither educators, nor business and industry, nor students have a tool to accurately assess critical thinking skills. And even if there was a tool the likelihood of this tool being unified and objective would be debatable according to the faculty in the Department of Physical Therapy and Faculty of Medicine at the University of Alberta. (Physiotherapy Canada, 2014). For Physical

Therapist Assistant students the student's clinical instructor (CI) uses a subjective tool called the Clinical Performance Instrument (CPI), where criteria #7 titled Clinical Problem Solving rates the student's critical thinking skills (American Physical Therapy Association [APTA], 2009). The CI rates the student's performance on a sliding scale. See figure 1.2.

Figure 1.2. Criterion #7 Clinical Problem Solving as listed on paper version of PTA-CPI.

**CLINICAL PROBLEM SOLVING**

**7. Demonstrates clinical problem solving.**

**ESSENTIAL SKILLS**

- Presents sound rationale for clinical problem solving, including review of data collected and ethical and legal arguments.
- Seeks clarification of plan of care and selected interventions from clinical instructor and/or supervising physical therapist.
- Collects and compares data from multiple sources (eg, chart review, patient, caregivers, team members, observation) to determine patient's readiness before initiating interventions.
- Demonstrates sound clinical decisions within the plan of care to assess and maximize patient safety and comfort while performing selected interventions.
- Demonstrates sound clinical decisions within the plan of care to assess and maximize intervention outcomes, including patient progression and/or intervention modifications.
- Demonstrates the ability to determine when the clinical instructor and/or supervising physical therapist needs to be notified of changes in patient status, changes or lack of change in intervention outcomes, and completion of intervention expectations (ie, goals have been met).
- Demonstrates the ability to perform appropriately during an emergency situation to include notification of appropriate staff.

**MID-EXPERIENCE COMMENTS:** (Provide comments based on the performance dimensions including supervision/guidance, quality, complexity, consistency, and efficiency.)

**FINAL COMMENTS:** (Provide comments based on the performance dimensions including supervision/guidance, quality, complexity, consistency, and efficiency.)

**Rate this student's clinical performance based on the essential skills and comments above:**

Beginning  
Performance

Advanced  
Beginner  
Performance

Intermediate  
Performance

Advanced  
Intermediate  
Performance

Entry-level  
Performance

**Significant Concerns:** If performance on this criterion is unacceptable, check the box and call the ACCE/DCE.

Mid-experience ☐
 Final ☐

**If performance on this criterion is beyond entry-level, check the "With Distinction" box and provide supportive comments.**

With Distinction ☐

22

Figure 1.2. Clinical Problem Solving criterion as seen on the paper version of the Physical Therapist Assistant Clinical Performance Instrument (PTA-CPI). Adapted from "Physical Therapist Assistant Clinical Performance Instrument (PTA-CPI), by the American Physical Therapy Association, 2009, *Physical Therapist Assistant Clinical Performance Instrument (PTA-CPI)* p. 22. Copyright 2009 by the Department of Physical Therapy Education. Alexandria, Virginia.

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The PTA CPI is accessible online. Figure 1.3 is an example of the digital format.

Figure 1.3. Criterion #7 Clinical Problem Solving PTA-CPI online tool

#### 7. Clinical Problem Solving

<b>Self Mid-Term —</b>	I always ask if I am unsure of something.
<b>Self Final —</b>	If there is ever a time when equipment or a machine is not open I feel that I am good at keeping the patient working until it becomes available.
<b>CI Mid-Term —</b>	Pt seeks help when needed for certain interventions or plan of cares but is able to make good clinical decisions for herself and the patients.
<b>CI Final —</b>	Student has made good clinical decisions during her treatments with pts. She would communicate well with the primary therapist about any questions or concerns about the patient status.

		B		AB		I		AI		E	
Clinical Problem Solving	Self								○	●	+2
	CI							△		▲	+4

Figure 1.3. Clinical Problem Solving criterion as seen on the online version of the Physical Therapist Assistant Clinical Performance Instrument (PTA-CPI). Adapted from “Physical Therapist Assistant Clinical Performance Instrument (PTA-CPI), by the American Physical Therapy Association, 2008, *Physical Therapist Assistant Clinical Performance Instrument (PTA-CPI)* criterion seven. Copyright 2015 by Liaison International Software Company.

#### Statement of the Problem

Is the CPI a valid and reliable tool when measuring a PTA student’s critical thinking skills? This study will analyze how critical thinking skills are assessed for PTA students within the state of Kansas.

#### Research Questions

1. According to Clinical Instructors, what are the advantages of the PTA-CPI?
2. According to Clinical Instructors, what are the disadvantages of the PTA-CPI?
3. How are Clinical Instructors defining, “Clinical Problem Solving” on the PTA-CPI?
4. What do Clinical Instructors look at when rating a PTA student’s mental critical thinking skills?
5. What do Clinical Instructors perceive as an adequate length of time, within a clinical rotation, to develop and assess critical thinking skills within a PTA student?



6. What do Clinical Instructors perceive as an adequate length of time, within a didactic classroom setting, to develop and assess critical thinking skills within a PTA student?

### **Conceptual Framework**

Two conceptual framework provided the framework for this study. Bloom's Taxonomy and a Stage Theory were used to categorize and define data. Bloom's Taxonomy was the framework most often applied in this study.

#### **Bloom's Taxonomy**

In 1956, Benjamin Bloom, an education psychologist, organized how thinking starts out simple and progresses to complex thinking. The taxonomy provides a framework for curricular design, common terminology and order to develop an objective. The taxonomy is a hierarchy and arranged in a systematic way from lower-level thinking to higher-level thinking within the three domains; Psychomotor, Affective, and Cognitive.

#### **Stage Theory**

Elder & Paul, (2010) explain in, "A Stage Theory," the development of critical thinking skills is not a continuum, but rather stages where the student passes through and progresses towards cultivating skills of critical thinking. The authors believe that educators need to recognize that skilled critical thinking develops only when encouraged and properly cultivated through predictable stages.

The PTA-CPI criterion number seven, "Clinical Problem Solving", defines clinical problem solving within the guidelines of essential skills. (see Figure 1.2). Clinical Instructors use the essential skills definitions when assessing the PTA students.

## **Definitions**

Bloom's taxonomy: Dr. Benjamin Bloom identified three domains of educational learning in 1956. The domains are: cognitive, affective, and psychomotor.

Critical thinking:

“...the ability to think about ideas or situations in order to fully understand their implications so as to be able to make an informed judgment or decision. Critical thinking includes skills such as questioning, predicting, investigating, hypothesizing, analyzing, reflecting, revising, comparing, evaluating and forming opinions. It involves an inquiry process of exploring issues that may not be clearly defined and for which there are no clear-cut answers. Critical thinking also includes metacognition – the process of thinking that enables us to reflect on our own learning as we develop knowledge and skills.” (Greenberg, 2014, “Shifting the Focus to Critical Thinking,” para. 4).

CTE educators: Career and Technical Education teachers either at the secondary or postsecondary level. The learner is introduced and prepared for a career involving a trade and/or skills (Kansas Department of Education, 2016, “Career and Technical Education,” para. 2).

CTE: Career and Technical Education are courses designed for the high school student and/or college student to enter the work force with the proper certification and skills to begin a career in a specified area (Kansas Department of Education, 2016, “Career and Technical Education,” para. 2).

CPI: Clinical Performance Instrument. This is a 60 page document that is used to assess specific performance and patient management criteria for physical therapy

students. Available in paper version or online (American Physical Therapy Association, 2014, “Clinical Performance Instrument,” para. 1).

Didactic method: The teacher is the master of the subject being taught, while the students are learning a baseline knowledge presented in a classroom setting. The format is often in a lecture and the points the teacher feels are significant for a student’s knowledge are presented in a straight forward manner (Commission on Accreditation of Physical Therapy Education, 2014, “Evaluative Criteria PTA Programs, 2014)

Post-secondary level: The college level. It is important to note that a student may be in the twelfth grade of high school and taking college courses. This type of student would be considered primarily secondary level. Once the student is fully engaged in college courses the student would be considered at the post-secondary level.

PT: Physical Therapist. They examine each individual and develop a plan using treatment techniques to promote the ability to move, reduce pain, restore function, and prevent disability. (APTA, 2009)

PTA: Physical Therapist Assistant. They provide physical therapy interventions under the direction and supervision of a licensed physical therapist (APTA, 2009)

Secondary level: The high school level; ninth, tenth, eleventh and twelfth grades (Kansas Department of Education, 2016)

### **Limitations**

The limitations of the study are those the researcher cannot control. The following are limitations:

1. The study is limited to only the state of Kansas. According to CAPTE, there are 5 PTA programs in Kansas with the average PTA program length being 12-24 months (CAPTE, 2014). At the time of this study three Kansas PTA programs use the PTA-CPI.
2. The PTA-CPI is a subjective view point from the CI.
3. Limited accountability for PTA educators to present tangible data to support reasoning behind assessment of critical thinking amongst students.
4. Limited amount of time a PTA educator has with students, thus making it difficult to progress within Bloom's taxonomy of higher order of learning.
5. There is not a unified definition and expectation for PTA students in a program to acquire and assess critical thinking skills.

### **Assumptions**

The following have been assumed before the study has begun.

1. All students in a PTA program at the secondary level, have met the required prerequisites of the program.
2. The PTA program faculty who are fulltime and/or adjunct educators are qualified in skill and knowledge by the business and industry standards. They are licensed PTs or PTAs.
3. "Clinical Education Faculty are generally comprised of the Center Coordinators of Clinical Education (CCCEs) and Clinical Instructors (CIs). While these

4. individuals are not usually employed by the institution that houses the PTA program, they do agree to certain standards of behavior through contractual arrangements for their services.” (Commission on Accreditation in Physical Therapy Education, 2014, “Evaluative Criteria PTA Programs,” p. 5).
5. The terms “Clinical Problem Solving” and “Clinical Decision Making” are components of critical thinking.

### **Significance of the Study**

Janice Greenberg, the Director of Early Learning Services at The Hanen Centre states in her article, *Teaching Children to Think: Meeting the demands of the 21<sup>st</sup> century* (Greenberg, 2014), “With information so readily available, the need to learn and memorize facts diminishes. But then what should education in the 21<sup>st</sup> Century look like? That is exactly what educators around the world are in the process of figuring out!” Greenberg goes on to say:

“To function and create change in this modern world, individuals need critical thinking skills – the ability to think about ideas or situations in order to fully understand their implications so as to be able to make an informed judgment or decision. Critical thinking includes skills such as questioning, predicting, investigating, hypothesizing, analyzing, reflecting, revising, comparing, evaluating and forming opinions. It involves an inquiry process of exploring issues that may not be clearly defined and for which there are no clear-cut answers. Critical thinking also includes metacognition – the process of thinking that enables us to reflect on our own learning as we develop knowledge and skills.” (Greenberg, 2014, “Shifting the Focus to Critical Thinking,” para. 4).

Critical thinking is a continuum, a process as Greenberg (2014) points out. Once critical thinking starts as a question the momentum picks up through predicting, hypothesizing, judgments, reflecting and back to questioning.

A student's critical thinking is difficult to assess. When assessing students critically thinking, it is not solely based on if the student gives the right or wrong answer, but most importantly it is about the student answering the *why*. When a student can verbalize the reasons for their actions, and the outcome is favorable, then critical thinking skills have taken hold (Greenberg, 2014).

The PTA CPI has fourteen performance criteria categories. Within these fourteen there are five performance criteria that are considered foundational elements in clinical work. These are called Red Flag Items on the PTA CPI and include: Safety, Clinical Behaviors, Accountability, Communication, and Clinical Problem Solving. Red flag items should be rated according to expected behaviors for the student's level of education. (APTA, 2011).

The PTA-CPI training module states the following about Red Flag Items:

“The clinical instructor is expected to assure that all performance criteria are observed during each clinical education experience. Observations should be documented in the comment section of the corresponding performance criteria, on the PTA-CPI. It may be appropriate for a student to be below entry-level performance, even on the Red Flag Items, especially during early clinical experiences. The Red Flag Items must be addressed immediately and include documentation, discussion with the Academic Coordinator of Clinical Education (ACCE), and the development of plans for improvement. Outcomes for the

student will vary based on the severity of the deficit and the amount of progress made in correcting deficits.”(APTA, slide 14, 2011)

The nine performance criteria are: Cultural Competence, Self-Assessment and Lifelong Learning, Interventions: Therapeutic Exercise, Interventions: Techniques, Interventions: Physical Agents and Mechanical Modalities, Interventions: Electrotherapeutic Modalities, Interventions: Functional Training and Application of Devices/Equipment, Documentation, and Resource Management (APTA, 2011).

The PTA CPI criteria of Clinical Problem Solving is assessed and weighted the same as all the other criteria. The Clinical Problem Solving assessing requires the student and the CI to examine *why* the student is choosing a course of action; whereas the other 13 criteria are assessing *how* the student is behaving. To analyze how critical thinking is assessed among PTA students will create avenues on how to assess critical thinking in other health science CTE programs.

### **Summary**

The critical thinking component is largely assessed within the Clinical Performance Instrument (CPI). Performance criteria number seven, on the PTA-CPI is titled “Clinical Problem Solving” (APTA, 2011)

The importance of studying critical thinking assessment in the PTA student is crucial because of the vital patient care component. The PTA student’s behavior must be carefully analyzed and assessed within the physical therapy setting. The length of a PTA program is likely to be two years and is at the Associate degree level. With the PTA programs being under the Career and Technical Education (CTE) umbrella, with a foundation of knowledge and skill in the realm of critical thinking, it is crucial to study

critical thinking among the career pathway of health science, specifically a PTA program. (see Figure 1.1).

This study analyzes how critical thinking skills are assessed for PTA students within the state of Kansas through face to face interviews from eight CIs who use the PTA CPI. The collection of data contributes to the exploration of the validity of the PTA-CPI when assessing critical thinking skills among PTA students.



## **CHAPTER II**

### **REVIEW OF LITERATURE**

An exhaustive review of the literature regarding critical thinking was conducted. Search engines used were: American Physical Therapy Association (APTA), Cumulative Index for Nursing and Allied Health Literature (CINAHL), National Center for Biotechnology Information (NCBI), National Institutes of Health (NIH), Physical Therapy Journal (PTJ), Physiotherapy Canada, Proquest, PubMed Central, PubMed/MEDLINE, Science Direct, and WebMD. Terms that were searched included: “critical thinking”, “clinical problem solving”, “PTA program length”, and “clinical performance instrument”. The search was further refined by combining “PTA-CPI” with “advantages” and “disadvantages”, and “critical thinking” with “age development”, and “critical thinking” with “Bloom’s Taxonomy” and “Stage Theory”. This resulted in seventeen articles; twelve research and five informational.

This literature review looks at the following topics: defining critical thinking and the process of brain development, age an individual is able to critically think, length of a PTA program adequate to develop and assess critical thinking skills, validity of the clinical performance instrument, and how educators within physical therapy assessed critical thinking.

## **Assessment of Critical Thinking in PTA students**

### **Definition of Critical Thinking**

Elder & Paul (2010) explain the development of critical thinking skills is not a continuum, but rather stages where the student passes through and progresses towards cultivating skills of critical thinking. The authors believe that educators need to recognize that skilled critical thinking develops only when encouraged and properly cultivated through predictable stages.

Elder & Paul's (2010) framework is a conceptual map formulated to guide teachers in instructing students to possess and fine tune the skill of critical thinking. Their assumptions are: 1) the stages are predictable and the individual learner passes through these stages, 2) in order for the learner to pass through a stage, that decision is connected to the learner's commitment and awareness. In other words passing from one stage to the next does not happen automatically or subconsciously, 3) the intellectual quality of the learner is key in order for the instruction to be successful, and finally the last assumption is a recognition that regression of learning the skill of critical thinking is possible.

The stage theory has been researched for twenty years at the Center for Critical Thinking and implications for instruction have been outlined and explained. The premise is to focus on the intellectual mind and not a psychological standpoint. Each stage of intellectual development contains the following variables: 1) Defining Feature, 2) Principal Challenge, 3) Knowledge of Thinking, 4) Skill in Thinking, 5) Relevant Intellectual Traits, 6) Some Implications for Instruction (Elder & Paul, 2010).

There are six stages, each containing a synopsis of the variables listed above. Those stages are: Stage One: The Unreflective Thinker, Stage Two: The Challenged

Thinker, Stage Three: The Beginning Thinker, Stage Four: The Practicing Thinker, Stage Five: The Advanced Thinker, and Stage Six: The Accomplished Thinker (Elder & Paul, 2010). A description of what each stage is according to Critical Thinking Development: A Stage Theory (Elder & Paul, 2010, “The stages we lay out are as follows,” para. 1).

Stage One: The Unreflective Thinker. The ability to use a metacognition is lacking. Their ideas lack identifying concepts or assumptions, and opinions are not given a logical thread of explanation, just merely stated in a brief concise manner (Elder & Paul, 2010, “Stage One: The Unreflective Thinker,” para. 1).

Stage Two: The Challenged Thinker. There is an awareness to critical thinking and how that affects behaviors. There is a simple understanding to the basic elements of reasoning and standards for the assessment of thinking such as: clarity, accuracy, and relevance. However, to apply concepts, assumptions, questions at issue, purpose, point of view, information, implications and consequences, is lacking (Elder & Paul, 2010, “Stage Two: The Challenged Thinker,” para. 1).

Stage Three: The Beginning Thinker. Deliberate measures to monitor and improve thinking are taken at stage three. There is an awareness of the need to assess and improve thinking, but a framework and systematic plan is lacking. Critiques of the individual’s thinking is welcomed as the individual knows the value of accountability; however the self-assessment within the individual happens sporadically (Elder & Paul, 2010, “Stage Three: The Beginning Thinker,” para. 1).

Stage Four: The Practicing Thinker. There is an awareness within the individual’s thinking to be flawed, monitored and corrected, and assumptions challenged. A systematic plan begins to formulate within the individual. The awareness includes

identifying self-deception, and critiques of their own conclusions, beliefs, and opinions are rationalized. However, they still have “limited insight into deeper levels of thought, and thus into deeper levels of the problems embedded in thinking.” (Elder & Paul, 2010, “Stage Four: The Practicing Thinker,” para. 1).

Stage Five: The Advanced Thinker. These thinkers actively analyze, assess, and critique their own thinking in the significant areas of their lives, and they also have insight and understanding of problems at deeper levels of thought. They may not do this at a consistently high level across all areas at all times (Elder & Paul, 2010, “Stage Five: The Advanced Thinker,” para. 1).

Stage Six: The Accomplished Thinker. These thinkers have established a systematic plan to assess and correct their own thinking. Also they continually critique this plan in order to improve their thinking. They have almost completely internalized the elements of reasoning and the standards for assessing reasoning, in which they operate on a deeply intuitive level. They experience a metacognition in their thinking and are very self-aware of internal thoughts and outside surroundings. They are problem solvers who bring people together, seek out alternatives, display sound judgment, and lead through example (Elder & Paul, 2010, “Stage Six: The Accomplished Thinker,” para. 1).

Elder & Paul (2010) define critical thinking as: “the ability and disposition to improve one’s thinking by systematically subjecting it to intellectual self-assessment.” (para.5). The framework described in this article was used in categorizing data collection for the research question, asked to the Clinical Instructors, “Do you apply your definition of critical thinking to yourself and if so how?”

## **Development of Critical Thinking Skills**

In his essay, "Assumptions: Believing and Knowing," Weil, (2004), states that an individual's assumptions are an integral component of an individual's ability to critically think. Assumptions are made up of one's habits, routines, and their subconscious ideology. An individual will form assumptions based on their interactions to the material world; their experiences and their perception of their identity. Weil (2004) pinpoints that when an individual critically thinks, that is when they are consciously aware of their habit and identity; they probe and self-reflect on their perceptions. Often they learn to question and critically examine other's assumptions.

Should an assumption not progress to the critical thinking realm, that individual's assumption will likely take them to the wrong conclusion, they will make wrong decisions, and make inaccurate and incomplete predictions that will create false solutions and judgments. Weil (2004) begs the reader to examine their assumptions; become aware of identifying what assumptions encompass an individual. By doing so critical thinking has entered the picture. When an individual examines their behavior and takes into account the environment and relationship of an illicit behavior; they can begin to ask why. Most importantly a change in behavior is a result of critical thinking.

Brookfield (1987) warns people to be leery of those who claim they have solutions to difficult problems. Do not take their solutions on an act of faith, but question and examine the proposed solution. The notion of a traditional, consistent, old habit is not a solid foundation to base a solution on; it is merely a habit and is best to be examined.

Weil (2004) continues to explain how difficult it is for people to challenge their assumptions. He stresses that a person do a complete, thorough inventory of their

assumptions. This includes what a person knows and how their assumption originated. Then ideally they would move to purposefully developing a new relationship within their environment in terms of what they do not know. This is a strong, solid component of critical thinking; the art of questioning how assumptions evolved into the mind and make contributions to perceptions. This then is morphed into truth and facts formulated by that individual. When an idea comes along and does not fit into a perceived truth or fact, in an orderly fashion, the mind dismisses this foreign idea as wrong and/or construed. Thus the owner of that mind forfeit the opportunity to examine their own assumptions and see them clearly. Creating a lack in their listening and learning from this intrusive foreign idea.

In order for an individual to identify assumptions, open mindfully explore new ideas that challenge existing assumptions and be able to verbally and logically express their thinking process requires a mature mind. Is there a set age or range of ages when an individual can choose to consciously and begin asking why to their well-constructed inventory of assumed truth, facts formulated by their perceptions?

Reading Hirschmann's (1975) account, gives an example to Weil's (2004) importance of identifying those assumed truths took hold. In Hirschmann's (1975) life she placed her identity,, ideology, and abilities in her essence in perceiving the truth. She was selected at age thirteen with millions of others, to be a part of Hitler Youth. She excelled at training in Prague, Czechoslovakia. During this time she gave Adolf Hitler her "unquestioning obedience and total willingness to follow his orders. (His) words became truth and law to me: he was my god and I trusted him." (pg. 13)

When Hirschmann learned of Hitler's suicide in April, 1945, she was at a loss. Hirschmann was forced to examine her assumptions and false truths at the age of eighteen. She was approximately fifty five years old at the time when she gives an account of her experience when she was eighteen. To say that eighteen years old is when she began to critically think would be inaccurate, and even if it were her experience is not the norm. Critically thinking is a process where the learner evolves and the depth of their thinking becomes embedded to their behavior (1975).

In 1956, Benjamin Bloom, an education psychologist, organized how thinking starts out simple and progresses to complex thinking. The taxonomy provides a framework for curricular design, common terminology and order to develop an objective. The taxonomy is a hierarchy and arranged in a systematic way from lower-level thinking to higher-level thinking within the cognitive domain according to Adams's (2015) article titled Bloom's Taxonomy of Cognitive Learning Objectives (2015). Evidence of brain science reports that Bloom's taxonomy does not develop critical thinking skills. The brain is a complex working system. Each part of the brain functions independently to carry out a specific component of a task. And when all components of the brain work in collaboration of the brain is functioning at its highest level. In essence there is no such thing as lower-level thinking when it comes to the science of the brain according to Kagan (2005). Adams (2005), states Bloom's taxonomy is effective for instructors writing learning objectives. Adams et al. (2015) refers to an article titled, A taxonomy for learning, teaching, and assessing: a revision of Bloom's taxonomy of educational objectives (Anderson, & Krathwohl, 2001), that cites a revision of the taxonomy based from findings of cognitive science. The reorganization placed the skill of synthesis at the

highest level of the hierarchy. And the skill level of knowledge was specified through four types of knowledge, which was helpful in creation of learner assessment. (Anderson & Krathwohl, 2001). Adams et al. (2015) acknowledges in her article that studies have shown that learning objectives in many post-secondary training programs and the curriculum, focus overwhelmingly on the lower levels of the taxonomy.

Athanassiou (2003) stressed the importance of a taxonomy to set forth goals and skills that a student must develop, build on, and master before proceeding to the next complex higher order thinking skill. The hierarchy within the taxonomy is defined as scaffolding. The student's behavior is observed and identified within the level of cognitive achievement. Wall (2014), asked two questions: Can higher order thinking skills be taught and can a higher order cognitive skills be transferred? If thinking skills are to be taught than a cognitive heuristics needs to be able to evaluate when thoughts do and when they do not lead to correct conclusions. Brown (2004) states that the Cognitive Domain is where the teacher determines knowledge and comprehension. Thinking is convergent, where the student is guided to what is learned by the teacher and likely a textbook is used.

The last four stages in the cognitive domain are: application, analysis, synthesis, and evaluation. Thinking within these four stages, Brown (2004) writes, is divergent. This is where the learner's thinking can deviate between categories and is guided by the learner; not the teacher or a book.

The most important aspect of Bloom's Taxonomy is that it teaches thinkers to be critical of their own thinking. Bloom's taxonomy makes the learner aware of the higher



learning categories within the cognitive domain. Without this awareness and self-assessment, students are not critical thinkers (Brown, 2004).

Bloom's Taxonomy, as Brown (2004) writes, is a tool for the learner to think critically; it should not be used as an evaluation on a student's cognitive thinking level.

The other two domains of Bloom's Taxonomy are: affective and psychomotor. The affective domain encompasses the learner's attitudes, emotions, and personal growth. The psychomotor domain is where the learner is developing a physical skill. Brown continues her explanation saying that Bloom's Taxonomy introduces the learner to life-long learning. Brown (2004) writes, "Learning is seen as a lifelong and variable process. This is the goal of critical thinking. We want the ultimate learning outcomes of our teaching to be a student who can approach the entire world and all of his or her experience as a critical thinker." (p.77)

Looking back at Hirschmann's (1975) account, she described herself as an eighteen year old who was empty and lost. She recalled this account into her adulthood and acknowledged her thinking is a process. Hirschmann used her experience at a young age to benchmark where she had been within her critical thinking skills development.

Kincheloe (1997), addressed how today's children have access into the adult world. Their perceptions are formulated through media and the internet. Steinberg and Kincheloe (1997) studied the culture of the new childhood. Kincheloe (2004), "I am amazed when I watch an 8 yr old surf the internet, watch television, listen to music, and talk on the telephone while doing homework-and fully attend to all tasks. Such abilities push the boundaries of critical thinking." (p.102). He states that speed in which a child can process information is remarkable. He feels the adults in these children's life must

begin to ask these children smarter questions and take the time to listen to them. We will then be able to understand the child's sophistication of their efforts and their self-direction and identity. Gonzalez (2004) reminds us that not all students move through the stages of development at the same sequential pattern. A young person's perspective is profoundly influenced and transformed by their sociocultural contexts (Gonzalez, 2004).

### **Age of Development of Critical Thinking Skills**

Johnson, Blum, & Giedd (2009) reported neuroscience has been tasked with placing an assigned age to maturity by determining that adulthood, age 18 years old is capable of critical thinking, there was little actual evidence to support that 18 years old is an accurate marker. Neuroimaging is not a clear indicator of whether or not a brain is able to think in a mature fashion, which is a full facet of critically thinking.

Anderson, Anderson, & Northam, (2001) described the function of the prefrontal cortex in brain development. The prefrontal cortex coordinates higher-order cognitive processes and executive functioning. Executive functions are a set of supervisory cognitive skills needed for goal-directed behavior, including planning, response inhibition, working memory, and attention. These skills allow an individual to pause long enough to take stock of a situation, assess his or her options, plan a course of action, and execute it. Poor executive functioning leads to difficulty with planning, attention, using feedback, and mental inflexibility, all of which could undermine judgment and decision making.

Luna, Thulborn, & Munoz (2001) reported that the brain's function of neuromaturation improved the transfer of information creating an individual to develop the skill of impulse control in their article; "Maturation of widely distributed brain

function subserves cognitive development” (Luna et al., p.787). The authors describe that young children can show abilities to use impulse control skills, however it is with an individuals age where their exercise of impulse control is consistently used.

These connections integrated emotional and cognitive processes and resulted in what is often considered to be emotional maturity; where an individual has the ability to regulate and to interpret emotions. The evidence suggested the integration process continues to develop well into adulthood. (Benes,1998).

Steinberg (2007), reported that psychologists, neurologist, and others had hypothesized that there is a temporal gap between the development of the brain which experiences an early developmental surge around puberty and the cognitive control system of the brain (which extends through late adolescence) underlies some aspects of risk-taking behavior. This temporal gap has been compared with starting the engine of a car without the benefit of a skilled driver.

### **Development of Critical Thinking Skills in PTA Students**

The education of a Physical Therapist Assistant requires completion of a two-year associate degree program. The PTA program must be accredited by the Commission on Accreditation in Physical Therapy Education (CAPTE). (The American Physical Therapy Association [APTA], 2013)

The APTA (2013) described the purpose of the PTA education is to: “graduate knowledgeable, competent, self-assured, adaptable, and service-oriented patient/client care providers; prepares the PTA graduate to perform selected components of intervention and data collection and assess the patient's/client's safety and response to the interventions provided under the direction and supervision of the physical therapist in an ethical, legal, safe, and effective manner; to communicate with other members of the

health care deliver team; interact with members of the patient's/client's family and caregivers; work cooperatively with other health care providers; teaching other health care providers and provide psychosocial support for patients/clients and their families and caregivers with recognition of individual, cultural, and economic differences.” (para.2)

APTA (2013) reported the length of a PTA program is usually two years; including a year of general required classes. The primary physical therapy content courses within the curriculum include subjects such as: anatomy & physiology, exercise physiology, biomechanics, kinesiology, neuroscience, clinical pathology, behavioral sciences, communication, and ethics/values. Approximately seventy-five percent (75%) of the PTA curriculum comprises classroom (didactic) and lab study and the remaining 25 percent (25%) is dedicated to clinical education. PTA students spend on average 16 weeks in full-time clinical education experiences. (para.4)

Johnson, Blum & Giedd (2009) addressed that an individual develops maturity at different rates and ages. A PTA graduate can be as young as eighteen years old and working within the physical therapy field. Once that individual has a year of experience in the field of PTA, they can become a CI to a PTA student. There is not a unified, consistent way to determine how long a PTA student will need in order for the PTA educator to meet the competencies set forth in the Evaluative Criteria PTA Programs (CAPTE, 2014).

The Commission (CAPTE) acknowledges the critical role of the profession in defining the nature of contemporary practice and for determining practice expectations and demands that are placed on graduates of accredited programs. The Commission expects that the institutional environments in which physical therapist

assistant education programs exist provide the opportunity for the physical therapy education program to thrive as both an academic and professional discipline in addressing the expectations of the profession. The Commission also acknowledges that an accredited program has the right to establish objectives, in addition to the objectives in these Evaluative Criteria, which are in keeping with the mission and resources of the institution, as well as the mission of the program. (p.2)

Ernstzen, et al., (2009) reported the classroom learning environment was student-centered and flexible for encouraging and fostering student inquiries. In the clinical learning environment, patients are presented and expected treatment. Unforeseen events often occur with patients or other health care workers. These unplanned events place a strain on student's learning opportunities. That is a challenge that clinical education programs face; being both patient-centered and student-centered. Students in physical therapy programs shift between the student in the classroom to the service provider in the clinical rotation. There is a need to assess specifically what 'student-centeredness' in the clinical context means. Once well-defined terminology exists and how a student can continue learning, as a student, within the clinical rotation; then and adequate length of time to develop and assess critical thinking skills within a PTA students classroom and clinical, can be thoroughly examined and explored.

### **Instrumentation of the CPI**

#### **Validity**

The American Physical Therapy Association (APTA, 1999) created the PTA-CPI,

after a three year field test. APTA describes the PTA-CPI as, “a voluntary standardized valid instrument that assess student performance during clinical education experiences.” (para.1). The APTA (2008) made revisions to the PTA-CPI and in 2010 the PTA-CPI became available in an online format (para.3).

The APTA (2008) stresses the importance of all CPI users to undergo a training in order correctly use the instrument for assessment. They felt this training ensured greater consistency in using the CPI. The training is free of charge and offered through the APTA Learning Center, which is an online course. Those who have completed a training are granted three continuing education units (CEUs).

### **Disadvantages.**

The Department of Physical Therapy, Faculty of Medicine, and the University of Alberta are developing an assessment tool for Canadian physical therapy clinical instructors (2014). Currently Canadian physical therapy education programs are using the American-based tool, the CPI. Canadian CIs were surveyed and the findings were published. The Canadian physical therapy program directors feel that the Physical Therapy Clinical Performance Instrument (PT-CPI) does not meet the needs of the program. The PT-CPI is an American assessment tool using a visual analogue scale (VAS) and Likert scale. Specific end points of novice-level performance to entry level performance. The argument is that users are not able to respond with a high degree of precision, which decreases the CPI validity.

The CI uses their subjective data collection as the means to assess a physical therapy student on the CPI. Another area examined to support the weak validity and reliability of the CPI is the training method the student and the CI go through in order to

maximize the effectiveness of the CPI. When the CI goes through the three hour training, and the student, ideally the CPI can be filled out effectively. However, many CIs report that their clinical schedule does not allow for a devotion of three hours for CPI training. (Assessment of Physiotherapy Practice (APP), 2009)

### **Advantages.**

English, Wurth, Ponsler & Milam, (2004) reported the use of the PT-CPI as a grading tool by Academic Coordinators of Clinical Education (ACCE) as the nationally used assessment tool. The grading methods varied among programs and was not consistent from one PT program to another. The study took into account the length of the student's clinical rotation as reason for the varied grading methods and inconsistencies. The study did not look at the PTA-CPI, but only the physical therapy programs, students and faculty (including the Clinical Instructors of PT students).

Straube & Campbell (2003) looked at a Clinical Instructors ability to discriminate and rate the PT student accordingly on the VAS scale. The authors concluded that the CIs were not able to clearly discriminate among one hundred PT student graduations of clinical performance. The authors concluded the PT-CPI was not any more valid and reliable than other assessment tools. They feel an investigation is needed to determine the variables that influence the CIs use of the CPI. Another area examined is CI satisfaction with the CPI for ease of use and comprehension. Straube and Campbell suggest development and research of standard CI education programs may improve consistency the interrater reliability of the CPI by CIs.

## **How Educators Assess Critical Thinking in Physical Therapy Students**

Jette, Bertoni, Coots, Johnson, McLaughlin & Weisbach (2007), reported that CIs identified entry level components of a Physical Therapist student. The components were; knowledge, clinical skills, safety, clinical decision making, self-directed learning, interpersonal communication, and professional demeanor. The CIs expressed they used an intuition or gut feeling when determining if a PT student was entry level. Stating that their decision was based largely in part on their, the CI's, subjective point of view. The definition of entry level, based the CIs responses, is more of a mentored independence.

Hayes, Huber, Rogers, Sanders, (1999) examined behaviors of physical therapy students that cause the CI to question the student's clinical competence. CIs observed physical therapy students behavior when determining if the students have the skills assumed necessary for safe and effective practice of physical therapy interventions. The report identifies three areas of unsafe practice in physical therapy students. Those areas are: 1) inadequate knowledge and psychomotor skill; 2) unprofessional behavior; 3) poor communication. The study stated that students who did not receive feedback from their CI about their poor cognitive behavior performance were unlikely to change their behavior. The report concluded that CIs need to identify acceptable behavior, discuss concerns with students and expect the student to change their behavior to an appropriate mode of clinical problem solving. Communicating what clinical problem solving is helped the student know the expectation and how to behave and provide a framework for the CI when the student's behavior was observed.



## **Summary**

The American Council of Academic Physical Therapy (ACAPT) is taking a close look at clinical reasoning skills in physical therapist doctoral education programs and are seeking to hear from clinical instructors through a survey the ACAPT Consortium has developed (2014). This survey would contain a framework to construct a survey specifically for CIs of PTA students within the state of Kansas. A needs assessment proposal is highly recommended to gauge how CIs are assessing the PTA student using the PTA-CPI.

The review of literature and lack of specific literature available for the PTA students critical thinking formation, illustrates a worthwhile and conducive study. An examination of other CTE programs and how critical thinking is assessed in the student may yield insights to the PTA programs.

## **CHAPTER III**

### **METHODOLOGY**

#### **Purpose of Study**

This study analyzed how Clinical Instructors (CIs) perceived and rated the Physical Therapist Assistant (PTA) student's clinical problem solving skills using the PTA- Clinical Performance Instrument (PTA-CPI). This study focused on the CI's experience in regard to how and what they look for in rating the PTA student's performance within a clinical rotation.

#### **Research Design**

For this study a phenomenological method qualitative design was used to study the Clinical Instructors (CIs) use of the PTA-CPI in assessing a PTA student's critical thinking skills; more specifically the criterion titled #7 *Clinical Problem Solving*. A phenomenological study focuses on people's experience and their perceptions to what they've experienced (Patton, 1990). The Clinical Instructors (CIs) interviewed share the experience of having a Student Physical Therapist Assistant (SPTA) and use the PTA-CPI as the assessment tool. The interview questions focused on what the CIs look for when assessing a SPTA's critical thinking skills and how the CI determines an accurate assessment using the PTA-CPI.

Interviews were conducted with the CIs, and the data was transcribed, grouped and coded to detect emergent themes. A guideline was used to analyze the phenomenological research as follows (Kleiman, 2004): transcriptions were read in their entirety, interview transcriptions read a second time and grouped according to question, sections/units were identified and integrated as having a similar focus or content related to the question being asked, the meaningful sections/units were categorized and labeled themes emerged, the findings were elaborated upon, re-visitation of the raw data descriptions in order to justify interpretations of both the essential meanings and the general structure (p.8-9).

Next a critical analysis occurred to verify that: a) concrete, detailed descriptions have been obtained from the participants, b) the phenomenological reduction has been maintained throughout the analysis, c) essential meanings have been discovered, d) a structure has been articulated, e) the raw data has verified the results (p.10).

### **Population and Sampling**

The population for this study was Clinical Instructors (CI's) in the state of Kansas who have used the PTA-CPI to assess the PTA student's critical thinking, specifically item seven "Clinical Reasoning" (APTA, 2007). According to the Kansas State Board of Healing Arts (2016), the population of active license for Physical Therapist in Kansas is 2,524; and 1,707 for active registered PTAs. The total population of practicing physical therapy therapists is 4,231 in the state of Kansas. A purposive sampling strategy was employed to select study participants who share an insight about the phenomenon (Patton, 2002). The strategy became a chain sampling or snowball strategy. There were five PTA Programs in the state of Kansas. Of those five programs, one PTA program was

suspended at the time of this study and subsequently ceased operation. Another program did not use the PTA-CPI for assessing and evaluating students so CIs for that program did not meet the study criteria for inclusion. The remaining three program directors were contacted requesting contact information for their CI's. Two of those program directors, upon further clarification declined the request for CI contact information. The one remaining program director provided five CI contacts who were invited to participate in the study via an introductory email message outlining the study. Additional study participants were obtained by asking the interviewees for recommendations of whom to contact for further data collection.

The inclusion criteria were: had been a CI for at least one PTA student from a Kansas PTA Program within the last three years, used the PTA-CPI to assess the PTA student, and have been a practicing therapist licensed within the state of Kansas at the time of being a CI.

The exclusion criteria were: had not been a CI for a PTA student from a Kansas PTA Program within the past three years, did not use the PTA-CPI as the assessment tool, and was not a practicing, Kansas licensed physical therapist nor physical therapist assistant.

Selection error and sampling error was addressed by contacting the Program Director and/or the Clinical Coordinator of three PTA Programs in Kansas, to receive names of CIs who meet the study's criteria. The CIs were invited to participate in the study via an introductory message outlining the study. Interested CIs then replied directly to the researcher. Of the three PTA Programs in Kansas who use the PTA-CPI, one PTA Program personnel staff responded with five names of CIs whom she had contacted and

all five agreed to an interview. One interviewee was recommended by a Physical Therapy Program's Director of Clinical Education. One interviewee was recommended by a co-worker who had been interviewed for this study. And the last interviewee was recommended by a Director of Rehabilitation within a skilled nursing facility. A total of eight interviews were conducted. Frame error was controlled by asking the interviewee, demographical questions prior to conducting the interview. This insured that the CI has indeed had a PTA student who is/was enrolled in a Kansas PTA Program. Contact was made by either an email or phone call prior to setting up the interview (Dillman, 2015).

This study focused on a small purposive sample of Clinical Instructors (CIs) who have used the PTA-CPI to assess the PTA student's critical thinking, specifically #7 Clinical Reasoning (APTA, 2007), as either a Physical Therapist or a Physical Therapist Assistant. The PTA students referred to, for the data collection, were all students in a Kansas Physical Therapy Assistant Program and the CI's interviewed were all credentialed license therapist practicing in Kansas. The CIs have had a PTA student within the past three years to present; and a minimum of one PTA student in order to have obtained an interview. Purposive sampling of eight interviews from CI's of past PTA students within Kansas PTA Programs was conducted during a six month time span.

### **Instrumentation**

The instrument used in this study was a researcher-developed questionnaire of interview questions. The participants received a copy of the questions two days prior to the face-to-face interview.

Researcher developed questions were formulated and reviewed by a panel of experts consisting of a Program Director of a Physical Therapy Assistant Program and

the researcher's advisory committee. The Physical Therapist Assistant who was on the panel of experts, was also a Physical Therapist Assistant Program Director. The other members of the panel of experts were on the researcher's advisory committee and had experience in administering guidance in all aspects of research. This panel of experts provided validity to the instrumentation used for this study. Their feedback was sought and the purpose of the interview questions was derived and related to the research questions. Changes were made based on their feedback.

The structure of the questions were open-ended and aim to gather the opinions of CIs on assessing critical thinking of the PTA student. The CIs were asked to define critical thinking and explain how, or if, they self-assess their own critical thinking skills. See Appendix A. Prompt questions were used to probe for details in collecting in depth data to the research questions.

An Institutional Review Board (IRB) was sought and approved for the investigation involving the use of human subjects. See. Appendix C.

### **Data Collection**

By using a structured interview strategy, the interviewer probed the interviewee for detailed examples and clarity of the interviewee's opinion. The researcher informed and obtained consent from the interviewee, prior to the interview. The interviews were conducted face-to-face.

The questions were designed to be answered with open ended responses; allowing for the participant to describe with detail the rationale behind their answer. The questions were sent to the participant prior to the interview. This allows for the participant to develop their answers and provide the appropriate examples. Prior knowledge of the

interview questions allows for the participant to be efficient with their time (Hill et al., 2005), since the participants were also busy working physical therapists and assistants. It was a gesture of common courtesy and respect for their time.

The interviewee was contacted through phone and/or email to set up a time for the interview. Once the interview date was set, the questions were sent to the participant. The interviewee was informed that the interview was to be recorded and consent is sought before the recording is to begin.

The interviews were then transcribed and coded. Windows Excel was used to code and categorize the data.

### **Credibility**

Credibility is a necessary component of trustworthiness and was established through lengthy engagement of participants in whom were interviewed. Credibility is providing validity and addressing bias from the interviewer. Data were collected through interviews. Peer review were used to help establish the validity of the instrument. Educators in PTA Programs and Workforce Development were asked to participate on the panel of experts. They helped construct the interview questions and provided feedback. The importance of the intent of the questions to be vague to allow for the interviewer to probe the interviewee to gain deep insights and rich data. The panel of experts assisted the researcher to foreseeable biases, and provided information to help the researcher network. The findings have been shared with the panel of experts.

## **CHAPTER IV**

### **RESULTS**

Eight interviews were conducted across Kansas, with Clinical Instructors. Among the CIs, six were practicing full time Physical Therapist Assistants (PTAs); and two were full time practicing Physical Therapists (PTs). All the CIs have had Student Physical Therapist Assistants (SPTA) and have used the Physical Therapist Assistant-Clinical Performance Instrument (PTA-CPI) as the assessment, evaluation tool. The CIs average two SPTAs per year from Kansas PTA Programs. The newest CI interviewed, was a PT who has been practicing for three years and has had two SPTAs. The most experienced CI interviewed, was a PTA who has been practicing for over 20 years and estimated he has had over twenty SPTAs during that time. The eight therapists interviewed, one half of them have taken a course on Clinical Instructing. Through this course the therapist earn the credentials and received approximately fifteen continuing education units. This course is not to be confused with the mandatory PTA-CPI training that is required in order to utilized and gain access to the CPI. The PTA-CPI training is a self-regulated tutorial online training designed to create uniformity among CIs when completing the PTA-CPI. The PTA-CPI tutorial training is also required of the SPTA in order to use the CPI. The PTA-CPI training is a two to three continuing education hour course. Table 4.1 is a breakdown of the CIs background whom were interviewed.



Table 4.1  
Background of Clinical Instructors interviewed

Interview Number	Type of therapist	Years practicing	Number of SPTAs	CI Credentialed
1	PTA	12	8	Yes
2	PTA	4	4	Yes
3	PTA	11	10	Yes
4	PTA	7	8	Yes
5	PTA	16	30	No
6	PT	5	8	No
7	PTA	3	5	No
8	PT	3	2	No

Some of the additional education background among the CIs interviewed include: bachelor-of-science in pre-med, exercise science, athletic training, and kinesiology. One CI has a Certified Lymphedema Specialist.

#### **How are Clinical Instructors defining ‘Clinical Problem Solving’ on the PTA-CPI?**

The first research question explored was: How are Clinical Instructors defining clinical problem solving on the PTA-CPI? The interview questions were asked in such a way as to compare and contrast the CI’s definition of critical thinking versus their definition of clinical problem solving in the context of student behaviors within the clinic. In addition the CI was asked if they use their definition of critical thinking as a therapist and to explain and describe within the context of their clinical rationale.

#### **What is your definition of critical thinking?**

When looking at the responses of how CIs were defining critical thinking; all defined critical thinking as a process within the framework of Bloom’s Taxonomy. The three domains of: Cognitive, Psychomotor, and Affective were utilized in their definition.

The Cognitive domain was utilized the most when defining critical thinking. Tables 4.2, 4.3, 4.4 break down the responses into themes, categories, and key word verbs within the context of the response.

Table 4.2

Six levels of the Cognitive Domain used to define critical thinking.

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Level of Knowledge	"Take in information" "Book knowledge to application" "Ask repeatedly what, why, how?" "Quiz the student" "Ask student what they would have done better?"
Level of Comprehension	"Understanding" "Assessing and being aware of all possible solutions" "Ask how is action important?" "Ask what is purpose of therapist action?"
Level of Application	"Application real life" "Extend application of knowledge" "How does diagnosis fit with application of intervention?" "Connect written instruction to clinical practice"
Level of Analysis	"Questioning" "Analyze" "Problem solve" "Analyzing all the information as a whole"
Level of Synthesis	"Sequencing" "Develop a solution" "Is diagnose relevant to application?" "Assessing and summarizing into a plan"
Level of Evaluation	"Decision making" "Plan is executed as an intervention" "A tool used to evaluate the situation to the best of your ability"

Table 4.3

Five levels of the Affective Domain used to define critical thinking.

Receiving Level	“Observing, listening and taking measurements” “Recognizing what is important” “Is SPTA understanding complexity of pt?”
Responding Level	“Converse with all parties involved” “Is student responding with logical reason?”
Valuing Level	“Gain confidence” “Gain confidence” “Confidence” “Have an open mind.” “Confidence in trying to figure out best action”
Organizational Level	“Sequencing”
Characterization Level	“Is the student displaying skillful judgment?”

Table 4.4

Four levels of the Psychomotor Domain used to define critical thinking.

Level of Observation	“Identify appropriate course of action” “Look at all sides of the problem” “Feedback is a big thing”
Level of Imitation	“Safe manner”
Level of Practice	“Experience” “Start with common protocol and see if it is appropriate” “Best intervention decisions come from experience & practice”
Level of Adaptation	“Sequencing (of therapeutic intervention)” “Is the diagnose relevant to application?” “A lot of critical thinking is patient specific” “Assess patients response to common protocol and adjust accordingly”

The descriptive verbs often overlap in categories and domains. The duplication of a key word verb was assigned a category by the researcher within the context of the interviewee’s definition.

Bloom identified six levels within the cognitive domain, from recall and/or recognition of facts, the lowest level, through increasingly more complex and abstract mental levels, of evaluation, the highest cognitive level. A description of the six levels are below (Bloom, 1956).

Knowledge is defined as remembering of previously learned material. Comprehension is defined as the ability to grasp the meaning of material. Application refers to the ability to use learned material in new and concrete situations. Analysis refers to the ability to break down material into its component parts so that its organizational structure may be understood. Synthesis refers to the ability to put parts together to form a new whole. Evaluation is concerned with the ability to judge the value of material for a given purpose.

The affective domain uses five categories from the simplest behavior to the most complex. These categories describe the manner in which an individual learner deals with things emotionally. This includes their feelings, values, appreciation, enthusiasms, motivations, and attitudes (Bloom, 1956).

The psychomotor domain is the domain where action is required, the doing. There are four levels within this domain, arranged from least amount of skill required to most amount. Those levels are observing, imitating, practicing, and adapting (Harrow, 1972).

**What is your process of self-assessment on your critical thinking skills? How often do you assess your critical thinking skills as a therapist?**

Next, the CIs were asked; “What is your process of self-assessment? And, “How often do you assess your critical thinking skills as a therapist”? All of them answered “yes” saying they critically think daily. They were asked to describe how they apply the definition of critical thinking to their decision making process as a therapist. Their responses were recorded and placed within a stage theory framework for critically thinking development where critical thinking is defined as, “the ability and disposition to improve one’s thinking by systematically subjecting it to intellectual self-assessment”, (Elder & Paul, 2010, “Critical Thinking Development: A Stage Theory,” para. 6). Table 4.5 lists the categories of the stage theory.

Table 4.5

CIs describe their process of self-assessment and how often they critically think in the clinic.

Critically Thinking Development: A Stage Theory (2010)

Stage One The Unreflective Thinker	<p>“I think I do”</p> <p>“I have to in my job”</p> <p>“Every day when I see patients”</p>
Stage Two The Challenged Thinker	<p>“challenged in acute setting”</p> <p>Ask self, “is there something going on here?”</p> <p>“Ask multiple therapist”</p> <p>“Go through textbooks”</p> <p>“Research online”</p>
Stage Three The Beginning Thinker	<p>“Therapist like challenge, we don’t like to loose”</p> <p>“Feel like detectives”</p> <p>“Trying to figure it out”</p> <p>“Trying to keep more focused on practice”</p> <p>“Trying to figure out best intervention for patient that day”</p> <p>“Start from beginning”</p> <p>“Talk to other therapist is good place to start, because you can’t remember everything”</p>
Stage Four The Practicing Thinker	<p>“See patient, talk to initial evaluating therapist”</p> <p>“I have great critical thinking skills”- conclusion based on pt’s reaction and/or results of treatment</p> <p>“Acquired through years through variety of different jobs”</p> <p>“Look at pt’s walk, how they are sitting, what’s their body language?”</p>
Stage Five The Advanced Thinker	<p>“Listen to patient”</p>
Stage Six The Accomplished Thinker	<p>“This is why I’m doing (it), I can tell you why”</p>

The CIs describe their process of self-assessment as a sequential process: 1) Observe environment surrounding patient, 2) Formulate and define areas that need attention, 3) Implement an intervention plan devised from reasoning of the preceding steps.

The CIs expressed personal factors that affect how they observe, formulate, define, implement and reason; 1) Their previous experience, 2) Their perceptions of the patient's feedback, both verbal and non-verbal, 3) Their rapport and valued opinion of their co-workers, 4) Their interpretation of data collection.

Using the Stage Theory framework, the majority of the CIs responses were categorized in Stage Three: The Beginner Thinker. This suggests the CI's self-assessment practices are efficient for delivering physical therapy interventions; however the areas for improvement are likely to challenge the therapist to dig deeper and be consistent with a systematic plan.

### **How are you defining Clinical Problem Solving on the PTA-CPI?**

The data collected from the CIs to define clinical problem solving within the context of the PTA-CPI is listed in Table 4.6.

Bott (1996) describes a classification system using Bloom's (1956) Taxonomy and the respective domains and the level of supervision required for the learner. The following is a description of those supervision levels: General (students observation and recall); Working (students practicing with supervision); Qualified (students practicing without supervision)(p.20).

Refer to Table 4.6 for CIs responses to: "How are you defining clinical problem solving on the PTA-CPI"?

Table 4.6

Clinical Instructors response to defining Clinical Problem Solving on the PTA-CPI  
General (Supervision Required)

General Student's observation and recall				
<u>Cognitive</u>		<u>Affective</u>	<u>Psychomotor</u>	
Knowledge	Comprehension	Receiving	Observation	Imitation
Look at Plan of Care (POC)	Does student have a sound understanding with what is going on?	Feedback depends on personality of the student; "I'll give them homework as feedback if I think they need to improve."	Seeing how the student's ability is to look at the patient, and to treat them appropriately.	What is student's first step?
"Are they asking the patient questions when first seeing them?"	Ability to interpret POC and goals	Is student listening to the patient?	see if student looks at the objective, subjective assessment and plan	How much prompting or cues is CI giving student?
Look at the situation and gather information to make a decision (student)	Can student come up with reasoning behind the questions I (the CI) ask them?	Think through progression (How is student putting process into place to get patient to goals?)	Watching SPTA do treatments	Intervene with feedback
Brainstorming	Can student understand big picture?		Process of patient's progression shows student's clinical reasoning.	I want some type of answer or their own thought process. I want to see what they're thinking.
Rely on the definitions given (drop down menu) on CPI	CI asks student "what is going on here?" 1st part of rotation: Can student understand what the exercise is doing?	Physical therapist (PT) asks patient, what they want for goals? How did they do last visit?		



Table 4.7

Clinical Instructors response to defining Clinical Problem Solving on the PTA-CPI  
Working (Supervision Required)

Working Students practicing with supervision				
<u>Cognitive</u>		<u>Affective</u>		<u>Psychomotor</u>
Application	Analysis	Responding	Valuing	Practicing
Decide what is best for the patient (student deciding)	Asks why are you doing that?	Communication skills (student and patient)	Example of student not caring per CI: "I don't think she cared". Student didn't do homework and said she was working.	Address time management
2nd part of rotation: can the student understand how the exercise helps?	Ask student how you did? What would you do differently? How can you adjust treatment?	Does student understand what the patient is telling them?  How attentive is student to patient?	Also CI, "I think lack of communication on both sides"- contributed to student not caring	Showing progression of treatments related to achieving goal
Form a treatment plan based of the IE (POC & goals)	Student's ability to demonstrate that they can observe, listen, and analyze.	I had a CI, and she always asked me questions, so if I asked a question she answered it with "what do you think?" And that makes you critically think.		What kind of information is student giving to patient
Implementation of eval to POC to goal to tx		Confidence (I don't put them on the spot in front of a patient)		Treatment to the patient has to be personalized

Table 4.8

Clinical Instructors response to defining Clinical Problem Solving on the PTA-CPI  
Qualified (Supervision Not Required)

Qualified Students practicing with no supervision				
<u>Cognitive</u>		<u>Affective</u>		<u>Psychomotor</u>
Synthesis	Evaluation	Organizing	Characterization	Adaptation
Summarize what student takes in to help decide plan	Critical thinking	Process	No data in this category	Ability of student to work with complex and simple patients
Is patient (pt) progressing?	Execute a plan	Think through progression (How is student putting process into place to get patient to goals?)		"I think critical thinking is harder in the outpatient."
Clinical problem solving has to be done daily				"Clinical problem solving is just strictly for the clinical part. And then critical thinking is outside of that."

All of the CIs define clinical problem solving by first observing and asking the SPTA questions that expose the student's knowledge, comprehension, initiation, and skill. The CIs use prompts such as: the drop down menu guidelines on the online PTA-CPI, the plan of care (POC) and/or previous written notes, and student's involvement in actively listening to the patient's subjective statements.

The CIs then looked at and supervised the student's ability to apply and analyze information, how the student was responding to environment, student's value system, and the student's demonstration of an appropriate physical therapy intervention.

Finally the CIs gain trust in the student's abilities and were comfortable giving the student a case load. By this time the student has synthesized and evaluated patient correctly, organized the treatment plan effectively, and adapted the intervention appropriately to bring the patient into meeting the goals set forth by the initial evaluating physical therapist.

Clinical Instructors were asked to define clinical problem solving on the Physical Therapist Assistant-Clinical Performance Instrument (PTA-CPI). Figure 4.1 define the essential skills needed for clinical problem solving on the PTA-CPI.

**Figure 4.1 #7 Clinical Problem Solving “Essential Skills” on PTA-CPI**

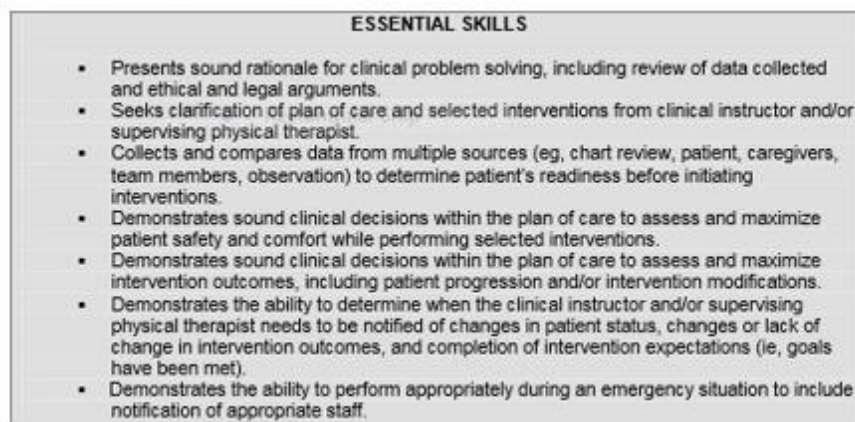


Figure 4.1 The Essential Skills list is a guide of those skills and behaviors that normally fall in the corresponding performance criteria. Adapted from PTA-CPI Presentation. American Physical Therapy Association, Department of Physical Therapy Education. Alexandria, Virginia.

The CIs responses were compared to the essential skills listed on the PTA-CPI. Each skill was analyzed to the responses and a synopsis given.

“Presents sound rationale for clinical problem solving, including review of data collected and ethical and legal arguments” (APTA, 2011). The CIs were looking at SPTAs review of data collection; however the CIs responses did not indicate that they

were looking at the SPTAs sound rationale for clinical problem solving in regards to ethical and legal arguments. The CI's response of addressing time management could be argued as an ethical and legal argument.

“Seeks clarification of plan of care and selected interventions from clinical instructor and/or supervising physical therapist” (APTA, 2009). The CIs did define clinical problem solving as to whether or not the SPTA sought clarification when implementing the plan of care for selected interventions.

“Collects and compares data from multiple sources (eg. Chart review, patient, caregivers, team members, observation) to determine patient's readiness before initiating interventions” (APTA, 2009). The CIs used the SPTAs abilities in showing progression and receiving feedback as a component of defining clinical problem solving on the CPI.

“Demonstrates sound clinical decisions within the plan of care to assess and maximize patient safety and comfort while performing selected interventions” (APTA, 2009). Patient safety has a strong component of defining clinical problem solving. This could be correctly assumed that the CI was defining clinical problem solving largely in part to the SPTA's demonstration of patient safety. The CIs response did not accurately reflect this assumption and it was the researcher's assumption that patient safety comes first and sometimes that means no intervention of physical therapy for that patient at that moment in time. For example: deep vein thrombosis, highly infectious and/or contaminants in environment that place patient in jeopardy, heart conditions, etc.

“Demonstrates sound clinical decisions within the plan of care to assess and maximize intervention outcomes, including patient progression and/or intervention modifications” (APTA, 2009). This was taken into consideration by the CIs in

determining whether or not the SPTAs clinical behavior was demonstrating clinical problem solving.

“Demonstrates the ability to determine when the clinical instructor and/or supervising physical therapist needs to be notified of changes in patient status, changes or lack of change in intervention outcomes, and completion of intervention expectations (ie, goals have been met” (APTA, 2009). The CIs did consider the SPTAs ability to determine when the therapist needed to be notified of a patient’s change in status. Their responses indicated that the CIs looked for the SPTA’s ability to address the patient’s goals with the appropriate intervention.

“Demonstrates the ability to perform appropriately during an emergency situation to include notification of appropriate staff” (APTA, 2009). According to the CIs responses there was not an indication that a SPTA’s demonstration of appropriate response in an emergency situation was a factor in how CIs were defining clinical problem solving on the PTA-CPI.

To conclude the research question, “how are clinical instructors defining, ‘Clinical Problem Solving’ on the PTA-CPI”; the data collected from the CIs the following responses to the interview questions: What is your definition of critical thinking?; What is your process of self-assessment of your critical thinking skills?; How often do you assess your critical thinking skills as a therapist?; How are you defining Clinical Problem Solving on the PTA-CPI?

The framework of Bloom’s taxonomy was utilized in categorizing the responses. The CIs recognize how the student must build upon knowledge and practice the skill in

order to gain confidence. The CIs responded within all three domains of Bloom's: Cognitive, Affective, Psychomotor.

When the CIs apply their definition of critical thinking to themselves within the clinical setting, their responses were general. The process of developing deeper critical thinking skills was absent and the recognition of the process being ongoing was not verbally stated in their response.

The CIs seem to appreciate the Essential Skills listed on the PTA-CPI, as this prompts them in gauging and establishing guidelines to where the SPTA was at within the clinical problem solving criteria. There may be reason for alarm how minimally stated the topic of safety came up in their responses. However, the first of the fourteen criterion listed on the PTA-CPI is the topic of "Safety".

### **What do Clinical Instructors look at when rating a PTA Student's mental critical thinking skills?**

The second research question explored was: what CIs look at when rating the PTA student's critical thinking skills. The CIs were asked to name attributes the PTA student should possess when exercising critical thinking, explain the considerations the CI used in assessing a PTA student's critical thinking on the PTA-CPI and finally describe a PTA student's rationale when appropriate intervention had been chosen by that student.

### **In your opinion, what are three important attributes a PTA student should possess when exercising critical thinking during a clinical rotation?**

The PTA student's mental critical thinking skills were discussed from the Clinical Instructor's perspective. CIs were asked to list three important attributes a student

physical therapist assistant (SPTA) should possess when exercising critical thinking during a clinical rotation? Table 4.9 summarizes their responses.

Table 4.9

Clinical Instructors assign three attributes they feel a SPTA should possess during a clinical rotation.

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Skilled Judgments	open minded make intervention judgments based off of accurate assessments not be judgmental ability to take quality measurements and special tests willingness to search and dig for answers able to think on your feet-adaptability good observation skills interpret observations time management: monetary value & productivity (progress effectively, not just filling time)
Knowledge	confidence understanding correlation between exercise and function knowledge of anatomy and exercise good knowledge base knowledge of interventions and progression be knowledgeable with interventions understanding desired outcome
Communication	communication listening skills taking constructive criticism very important good empathy good documentation attentiveness to patient's needs good communication skills

The responses were categorized into these three attributes that the CIs feel the SPTAs should exercise when using critical thinking in a clinical rotation: 1)Skilled judgments (time management, progression, observations, open minded, dig for answers), 2) Knowledge (understanding interventions, book knowledge, anatomy, exercise, rationale), 3) Communication (confidence, listening, empathy, documentation).

**What are the considerations you use in assessing a PTA student's critical thinking when filling out the CPI #7 Clinical Problem Solving?**

The CIs were asked, “What are the considerations you use in assessing a PTA student's critical thinking when filling out the CPI, #7 *Clinical Problem Solving*?” Table 4.10 lists the responses.



Table 4.10

Clinical Instructor's considerations used in assessing SPTA's critical thinking when filling out PTA-CPI

Ability to explain rationale	<p>converse with SPTA to see if they understand why they're doing what they're doing</p> <p>how SPTA formulates treatment and why those interventions tell patient why they are doing exercises</p> <p>type of questions SPTA asks CI; "what do you think about ____?" vs. "what do I do?"</p> <p>are they asking questions to CI or is CI prompting?</p> <p>CI stated, "I love the questions in confidence" over "can I do ____?"</p>
Where SPTA is at in PTA Program	<p>SPTA at in program? (4 CIs stated this consideration)</p> <p>relation to where at in program (supervision)</p> <p>know expectation of SPTA's school (and close with ACCE)</p>
Ability to carry out Plan of Care	<p>ability to carry out POC</p> <p>student takes plan of care (POC) and formulates treatment</p> <p>interaction with patients</p> <p>understanding feedback from patient</p>
Supervision	<p>how much supervision is needed</p> <p>supervision with help of PTA CPI guidelines</p> <p>how much cuing is CI giving</p> <p>supervision (by way of % of caseload SPTA is able to carry out)</p> <p>how much prompting SPTA needs from CI</p>
Complexity of patient (comorbidities)	<p>complexity of patient's diagnosis</p> <p>complexity of patient &amp; SPTA choice of intervention</p> <p>appropriate intervention</p> <p>consider complexity of patient- simple patients at first (of rotation) then complex</p> <p>how SPTA handles different situations</p>
Skilled Judgments Knowledge Communication	<p>uses attributes and demonstrates problem solving (listening, interpret observations, take quality measurements &amp; special tests)</p> <p>uses attributes to assess clinical problem solving (confidence, observation skills, knowledge of interventions and progression)</p>

The number one consideration CIs use in assessing the SPTA's critical thinking when filling out #7 *Clinical Problem Solving* was the SPTA's ability to explain rationale. The SPTA was viewed through the CI's lens as to whether or not a logical rationale was given to explain the SPTA's course of action. The context of the SPTA's response and the confident manner in which they were giving the explanation were considerations the CIs used in assessing the SPTA's critical thinking.

The second considerations CIs used in assessing the SPTA's critical thinking skills were: supervision and where the SPTA was within the PTA Program. When looking at supervision the CIs consider how much prompting and cuing the SPTA needs from the CI, in administering appropriate interventions; as well as percentage of case load SPTA has in effectively delivering treatments. The expectation to percentage of case load given to SPTAs, was largely related to where SPTA was at in PTA Program. SPTA's first clinical rotation were often shorter duration and the non-red flagged criterion on the PTA-CPI expectations were at most considered an "Intermediate Performance" on the Likert scale. Whereas the end of the program rotation clinical performance expectation was "Entry Level" performance by the SPTA in all fourteen PTA-CPI criteria.

The CIs consider how the SPTA demonstrates critical thinking skill with the SPTA's ability to apply the plan of care and the appropriate, effective treatment of patients with comorbidities. The plan of care lists the patient's parameters in which the delivery of physical therapy interventions were performed. The patient's outcome was deemed successful in relation to the goals set forth by the physical therapist at the initial consult with the patient. Often patients present with an extensive previous medical

history that directly or indirectly relate to the patient's healing. For instance SPTAs need to understand how diabetes effects the patient's ability to heal.

Finally the CIs consider the SPTA's attributes of: skilled judgments, knowledge, and communication, when assessing the student's critical thinking. These attributes refer to the SPTA's demonstration of problem solving through listening, interpreting observations, and taking quality measurements and performing special tests. Also the attributes mentioned include clinical problem solving to include the manner of SPTA confidence, the SPTAs observation skills, and their knowledge of interventions and progression.

**How would you describe the rationale of the PTA student in terms of selecting the appropriate intervention for the physical therapy patient?**

The final interview question asked of the CIs when rating the SPTA's mental critical thinking skills was: "How would you describe the rationale of the PTA student in terms of selecting the appropriate intervention for the physical therapy patient?" Table 4.11 were the CIs responses.

Table 4.11

CIs describe PTA students' rationale when SPTA selects appropriate intervention for patient

Cognitive-questioning the why? (CIs question SPTA)	<p>asked current SPTA, his response, "look at diagnoses and then decide treatment"</p> <p>ask them questions and force them to do something different, outside box thinking</p> <p>encourage them to explain by saying there is no right or wrong answer, ask them</p> <p>ask why they chose this or that</p> <p>ask for an alternative plan</p> <p>ask what to do if patients refuses to work with therapist</p> <p>observe and ask questions (between patient, SPTA, CI)</p> <p>CI asks SPTA how they felt patient responded to tx based on SPTA's observations</p> <p>CI asks SPTA's what is game plan? And Why?</p> <p>have SPTA tell CI what they plan on doing with patient; "Where we gonna start?"</p> <p>ask what's something else we can do?</p> <p>engaged dialog between CI and SPTA about intervention of patient</p>
Cognitive-feedback	<p>ability to progress patient; does SPTA need prompts?</p> <p>SPTA's education received from CI during clinical</p> <p>struggle with outside the box thinking; those things not in textbook</p> <p>we show progression</p> <p>we look at patient's reports of their pain</p> <p>CIs need for cuing SPTA</p> <p>working relationship between CI &amp; SPTA as healthcare team</p> <p>CI and SPTA talk about patient's intervention and how they did</p>
Cognitive-previous knowledge	<p>background of SPTA helps students rationale (experience)</p> <p>SPTA chooses a known intervention based on previous rotation or classroom</p> <p>past experience (from clinicals)</p> <p>seeing similarities of diagnosis between patients (experience dictates course)</p> <p>SPTAs are very basic and don't know much about intervention</p> <p>SPTAs do well with rationale have had experience as a tech, BS in related field</p> <p>SPTA decide interventions based on what they've seen others do CI compares SPTAs intervention rationale on CI's thought process (standard is CIs)</p>

Psychomotor-previous experience & background	<p>follow previous list of treatment</p> <p>based on what they are seeing pt for that day and how pt responds subjectively</p> <p>SPTA gets to know patient (name, PMH, diagnosis)</p> <p>SPTA progresses patient</p> <p>based on what worked last time</p> <p>take into account patient's subjective feedback on last treatment</p>
Affective-CI's rationale guides what should be done	<p>based on CI's values, but expect SPTA to behave as imitating CI fearful of being wrong</p> <p>go over eval with CI: ROM, modalities, strength assessments, modalities avoid</p> <p>prepare treatment, plan ahead</p> <p>SPTA runs treatment plan for that day by CI first</p> <p>read whole note (diagnosis, goals, etc)</p> <p>some students more focused on passing boards than engaging in clinical experience</p> <p>"this is the thing I feel like schools need to work on a little bit"</p> <p>empathizes with students lack of rationale at first, because remembers difficulties</p> <p>"I feel like PTA students are usually lacking a little bit...(because their PTA program is too short)...the instructors count on the CIs to teach them a lot of the interventions. That's why they're here....You're gonna make a lot of CIs upset because we don't want to babysit."</p>

When it comes to the SPTA selecting the appropriate physical therapy intervention for the patient, how were the CIs describing the SPTA's rationale? The CIs responses were grouped into the three domain levels of Bloom's Taxonomy: cognitive, psychomotor, and affective.

Within the cognitive domain the CI describes the SPTA's rationale by the SPTA's responses and/or behavior to the following: 1) What is the SPTA's response when the CI asks them a direct question related to the intervention?, 2) How is the SPTA responding to feedback from the CI? Are cues and prompts needed from the CI in order for SPTA to progress forward with skill? Is SPTA progressing patient towards goals? What is the

SPTA observing from the patient's behavior and subjective statements?, 3)The CI takes into account the SPTA's previous learned knowledge. This knowledge is derived from the SPTA's background, experience, and classroom knowledge.

In the psychomotor domain the responses from the CIs include the SPTAs previous experience and background. The levels in the psychomotor domain were: observation, imitation, practice, adaptation. The CIs responses were based on what they've seen the SPTA do or were made aware of through previous experience and background knowledge the SPTA possesses.

The third domain in Bloom's was the affective domain. This category holds the CIs responses that state the SPTA's rationale was strongly compared to their CI's rationale. CIs described the SPTA's rationale as more of a pre-plan in which the CI would approve or disapprove. The levels within the affective domain were: receiving, responding, valuing, organization, characterization. The CIs responses indicated that they were describing the SPTAs rationale within a value system held by the CI.

### **What do clinical instructors look at when rating a PTA student's mental critical thinking skills?**

First off they look at attributes the SPTAs should exercise when using critical thinking. The three attributes the CIs stated were categorized as skilled judgments, knowledge, and communication.

Secondly the CIs stated the considerations they used when assessing the SPTA's clinical problem solving on the PTA-CPI. Those considerations were, the SPTA's ability to explain rationale to their clinical behavior, level of needed CI supervision, and where the SPTA was within the PTA Program. Also, the CIs consider the SPTA's attributes of:

skilled judgments, knowledge, and communication, when assessing the student's critical thinking.

Lastly the CIs describe the SPTA's rationale when rating a PTA student's mental critical thinking skills. The CIs asked the SPTA questions. The SPTA's answer were then used to describe the SPTA's rationale by the CI. This response was categorized within the cognitive domain. The psychomotor domain was used as well in the CIs response of describing the SPTA's rationale. The CIs observe the SPTA's clinical behavior and interactions with the patient. The CI noticed how the SPTA took into account previous SPTA-patient encounters. Finally the affective domain was utilized when the CI described the rationale of the PTA student. The comments of some CIs were mere judgments and not description of the SPTA's rationale. The influence of the CI's deeply held values is used to describe the SPTA's rationale; leading to descriptive judgments that the SPTA's rationale is lacking.

**According to Clinical Instructors what are the advantages of the PTA-CPI?**

**Explain the advantages of the PTA-CPI?**

The Clinical Instructors were asked to list the advantages the PTA-CPI. Table 4.12 are their responses.

Table 4.12

CIs describe the advantages of using the PTA-CPI

Cognitive- identifies/guidelines/definitions	<p>provides direction via drop down menu</p> <p>good uniformed definition for what the category is</p> <p>bullet points under "Essential Skills" guide you</p> <p>what critical thinking is to the creators of PTA CPI</p> <p>try to address each bullet point best I can</p> <p>points out strengths of SPTA</p> <p>sample behaviors identifies what you should look for</p> <p>broad horizon of things to cover</p> <p>gives clear parameters</p> <p>compare screen comments from SPTA and CI</p> <p>tests multiple aspects of what SPTA is required to do</p> <p>allows CI to formulate plan to SPTA to improve skills</p> <p>grading easier by way of CPI being organized</p> <p>gives me an idea where I should rate SPTA</p>
Affective- Values (feedback which is perceived, expressed, corresponds, compliment, reinforce, stimulate)	<p>overall picture of how student is doing</p> <p>makes the student be introspective</p> <p>point out things CI can work on with SPTA that CI didn't realize</p> <p>have to comment more (allows for more detailed specific feedback)</p> <p>proof to ACCE we've reviewed CPI</p> <p>allows for objectivity when observing SPTA's abilities</p> <p>takes a little bit of the bias out of it</p> <p>what specifics a SPTA needs to work on</p> <p>good feedback to the schools</p> <p>provides direct feedback to my SPTA</p>
Psychomotor- logistics/online ease (work, equip, generate, inscribe)	<p>like online better than paper</p> <p>like it a lot- especially online</p> <p>can type faster than can write</p> <p>ability to save/store info (not in one setting)</p> <p>timesaver- log on to CPI during work time (pt cx)</p> <p>can access old CPI for reference</p> <p>ease of submitting when done filling out</p> <p>checkpoints on line CPI for review online ease to access</p> <p>plug in midterm comments</p>



To summarize the above statements, all but one of the CIs explained the advantages of the PTA-CPI as: established guidelines, definitions, and identifications of knowledge, application, analysis, synthesis, and evaluation. One CI stated the advantage of the PTA-CPI within the psychomotor domain by explaining the online ease and logistic of the instrument. Five of the CIs reported the advantages to be in the affective domain. The PTA-CPI allows for comments and the CIs reported values are often expressed in the comment box. This can be expressed in the form of feedback, compliments, reinforcements and stimulation of improvement ideas. Most of the CIs responses were a combination of all domains: cognitive, psychomotor, and affective.

**According to Clinical Instructors, what are the disadvantages of the PTA-CPI?**

**Explain the disadvantages of the PTA-CPI?**

The CIs were asked to list the disadvantages and disadvantages of the PTA-CPI. Table 4.13 are their responses.

Table 4.13

CIs describe the disadvantages of using the PTA-CPI

Cognitive- (format/content organization)	<p>some things don't apply  SPTA didn't perform them,  it wasn't observed or not  NA (due to setting of clinical)  uses paper version to help fill out on line version process  because of logistics of acute setting  too many categories to assess  hard to recall everything SPTA has done for commenting  hard to transfer from topic to topic.  "I'm detailed oriented and I like to go back and forth"  too much info, too many things to look at (areas to rate)  tries to grade students in all aspects of physical therapy  hard to maneuver CPI online vs. paper version laid out in front of you  the intervention section on the CPI is unorganized  uses ambiguous terms  scale too broad (Likert scale)</p>
Affective- (subjective/show concern for)	<p>inconsistencies with what CI said and what SPTA observed  allows for CI to have a bias  Subjective to setting of rotation  Ex: entry level but rotation is Burn Unit then SPTA not entry level  "common sense" areas that are not practical to rate  Ex: Safety and cultural competence  subjective to CI's liking of the SPTA; bias in grading  too broad not specific to CI's practice setting  CPI not setting specific</p>
Psychomotor- (generate/work)	<p>percentage of case load breakdown needs to be prominent and visual;  not as a pop up when cursor scrolls over it  CPI training needs to be done prior to SPTA arrival  Ex: CI trained for CPI, 2 yrs later got SPTA  prep time it takes to familiarize yourself with format of CPI  limited internet access at hospital due to security  longer to go through the intervention section  have to sign off before you can go to next topic  have to answer all items before you can move on  takes a lot of time to fill out correctly  1-1 1/2 hours to fill out (effects productivity)  puts a lot in to it to give detailed feedback  repetitive &amp; redundant  in acute setting hard to find computer  time consuming (2-3 hours to fill out)  have to fill out outside of work time  CPI is repetitive</p>

All the CIs use the PTA-CPI on line format. The CIs felt the biggest disadvantage of the PTA-CPI was that it was time consuming with too many categories to fill out, takes time to understand the format of the CPI and to complete the training modules in order to access and use the PTA-CPI. Also, the CIs felt the CPI was redundant and repetitive nature added to the rationale of the PTA-CPI being too time consuming.

The CIs stated another disadvantage of the PTA-CPI is that the logistics are not practical. One CI voiced frustration with the PTA-CPI because they cannot work on it while at work. The employer demands of productivity placed on the CI were more pressing than evaluating the SPTA using the PTA-CPI. Another logistic a CI stated was that it is difficult to find a computer to use within the acute setting and the hospital's security system prevents the CI from logging into the PTA-CPI. All CIs expressed a logistical disadvantage of the PTA-CPI in that the evaluation tool required a sign off before moving on to complete the assessment.

CIs stated another disadvantage of the PTA-CPI was that the content was too broad, unorganized, and have to comment before moving on to next criterion. The content was not specific to rotation. Another disadvantage the CIs stated was that the PTA-CPI has a subjective element to it. The CIs expressed concern that the subjectivity allows for their biases. Also the subjective-ness creates an inconsistency between the SPTA self-evaluation of the PTA-CPI and the CI's evaluation.

To summarize the disadvantages of the PTA-CPI reported by the CIs, all reported the PTA-CPI is too time consuming and the scope is too broad and unorganized.

**Explain the training you've received to prepare you as a Clinical Instructor.**

Table 4.14 contains their response.

Table 4.14

Training Level of the CI.

	Type of CPI Module Training	Credential CI Program	PT or PTA Program's Individual Course Offered to their Clinical Instructors
Interview 1	PTA-CPI	Took CCPI 8 years ago	Washburn PTA Program held course in 2014. Academic Coordinator of Clinical Education (ACCE) talked of expectations of CIs and provided educational resources. KCKCC (Kansas City Kansas Community College) held similar course within the last year.
Interview 2	PTA-CPI	Took CCPI 4 years ago	Took course. Topics included: <ul style="list-style-type: none"> <li>• How to deal with problem students</li> <li>• How to challenge exceptional students</li> <li>• How to fill out PTA- CPI effectively</li> <li>• Expectations of CI</li> </ul>

Interview 3	PTA-CPI	Employer brought CCPI to employees	Attended Washburn's course designed for their CIs and what the expectations are. Also, the ACCE went on cite for a face to face meeting with CIs at their facility.
Interview 4	PTA-CPI	Took CCPI	Did not state participating in a PT or PTA Program's course.
Interview 5	PTA-CPI	Did not take CCPI	Stated involvement between Center Coordinators of Clinical Education (CCCE) and ACCE is liaison for setting up rotation, but did not state attending a PTA Program's course
Interview 6	PT-CPI PTA-CPI	Did not take CCPI	Participated in Wichita State's online course for CIs.
Interview 7	PTA-CPI	Did not take CCPI	Has not participated in a PT or PTA Program's course
Interview 8	PT-CPI PTA-CPI	Did not take CCPI	Has not participated in a PT or PTA Program's course. Did mention PT school as a help in training to become a CI for PTA students.

Table 4.14 is a breakdown of the CI's training to help prepare them to become a Clinical Instructor. All the CIs have had the mandatory PTA-CPI training through online tutorials. The CIs stated this training has helped them to gain understanding and direction in how to fill out the PTA-CPI; and to know what the expectations are of them in assessing the SPTA. The CIs who have taken the Credentialed Clinical Instructors Program stated how helpful this was with assessing PTA students.

**What do Clinical Instructors perceive as an adequate length of time, within a clinical rotation, to develop and assess critical thinking skills within a PTA student?**

The CIs were asked to describe an adequate length of time, within a clinical rotation, to develop and assess critical thinking skills within a PTA student. Table 4.15 identifies their responses.

Table 4.15

CIs respond to what they feel is an adequate length of time for a SPTA's critical thinking skill development during a clinical rotation.

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Interview 1	<p>depends on student  where student is at in program  the experiences they've had  Example 1: SPTA has critical thinking skills (last rotation-6 wks)  knows what he's doing  able to implement new stuff, modify treatment; all without asking  Example 2: SPTA critical thinking skills not as strong as other SPTAs  (2nd rotation out of 3)  had to encourage more by way of the CI asking SPTA to come up with  new ideas  CI had to discourage him from using same treatment for everybody  CI noted difference between two examples of the SPTAs ability of  critical thinking</p>
Interview 2	<p>1st week- orientation, "this is our clinic. This is what we do"  2nd week- CI expects SPTA to understand a little bit more on the  exercise progression. Because pt typically seen 3x a week  By midterm- CI can tell if SPTA is thinking on own with why and if  understanding is deepening</p>

- Interview 3    by midterm SPTA to see 10 pts a day and have established skills for that case load  
                     if not there by midterm, CI asks SPTA how can we challenge pt more  
                     All the CIs have had the mandatory PTA-CPI training through online tutorials. The CIs stated this training has helped them to gain understanding and direction in how to fill out the PTA-CPI; and to know what the expectations are of them to guide the SPTA.  
                     exercise progression  
                     show them surgical protocols by other therapists
- Interview 4    simple pt: by 3-4 weeks of rotation SPTA needs to feel comfortable to go in with treatment plan for the patient, have good time management & problem solving  
                     Complex pt: towards end of rotation (CI normally has SPTA for 6 weeks) and SPTA able to see a few pt's without CI intervention
- Interview 5    by 3 weeks SPTA demonstrating some rationale for changes in treatment: progression, goals, pt's subjective statements, SPTA explanation of rationale
- Interview 6    Every student is different  
                     1st week-lots of observations in getting to understand how the clinic works  
                     2nd week-SPTA shows more confidence and they start demonstrating some of their skill  
                     (initiate treatment)  
                     take pt's subjective info  
                     decide what they want to start demonstrating  
                     Definitely by 2nd week they should be demonstrating those skills.  
                     3rd or 4th week student had better be demonstrating something within that second week easily able to assess (how the student is demonstrating their skill)

- Interview 7 "It's so hard with PTA because, (the clinical rotation) was not a lot of time"  
The four weeks is nothing.  
The five week was a little bit better.  
The six week, I actually started to feel I was there and getting comfortable and kind of in the groove of things.  
"I don't think there is a good time line, it's such a short time"  
A 3 week (clinical rotation) is absolutely nothing"  
Example of Washburn SPTA: took him 2 1/2 weeks to really get started feeling more confident and comfortable (6 week rotation)
- Interview 8 "I really think a longer rotation like 6-8 weeks would be great"  
different settings require different lengths of clinicals  
Example: "I feel like outpatient there are so many different skills you utilize; more so than skilled nursing or inpatient therapy"  
students need more time for understand ( to cover all that's on CPI)  
"PT students are more equipped to critically think quicker vs. a PTA student" (because of rotation length)

The CIs responses were answered within the framework they have had to assess the SPTA's critical thinking skills within the clinical rotation. Those CIs who had a SPTA for a six week rotation were more apt to perceive an adequate length of time as six weeks, depending upon where the SPTA was at within the PTA program, the setting of the clinical rotation, and the experience of the SPTA. The one CI who has not experienced having a SPTA for a six week rotation, would value having that length of time. Most CIs mentioned that by the third week, or midterm, the SPTA has demonstrated some ability of their critical thinking skills. The CIs comments concluded that they were able to assess the SPTA's critical thinking skills by the midterm.



**What do Clinical Instructors perceive as an adequate length of time, within a didactic classroom setting, to develop and assess critical thinking skills within a PTA student?**

The CIs were asked to describe what they perceive as an adequate length of time, within a didactic classroom, to develop and assess critical thinking skills within a PTA student. Table 4.16 identifies their responses.

Table 4.16

CIs respond to what they feel is an adequate length of time for a SPTA's critical thinking skill development during the classroom setting.

Interview 1	"I think over the two year program, and then just with the clinical experiences...that's probably the best amount of time." Described Washburn's program as "really good". (1 yr Gen. eds, 2 yrs PTA school)
Interview 2	"With my education (experience) I feel they (PTA program faculty) could have started that (develop and assessing critical thinking skills) almost immediately... "We learned more this is what it is (components of physical therapy interventions), they didn't really delve into why you're really doing it, the big picture.
Interview 3	"I think they should have some by the time they go on to their first clinical, but I don't think the confidence is there just yet." Did not specify or describe what an adequate length of time should be
Interview 4	"Some are more book smart and not so much when it comes to clinical skills, and then vice versa too. It's kind of hard to measure, or determine, with students because of that reason. " "I think having more practicals, or practicums, that are real life scenarios more often is something that would help"
Interview 5	"This is a tough one. If they (SPTAs) practice their skills on each other, and graded on it...they (still) need more experience with that." "I don't want to give a timeframe, it seems like it's very limiting." "They need more experience with what they don't know and actually have problems to figure out."(suggested volunteerism of real life PT issues) "I know from my own experience we didn't spend a lot of time going over the communication skills"

- Interview 6 (reflects on his time as a student) "If I remember right...we had to explain why or what we would do (within a given scenario) within the first two or three weeks of being a student."  
 "I think they're gonna be able to demonstrate that stuff in a matter of weeks (but ) it's a hard question (to) answer because I'm not in that situation so I related that back to when I was a student....."  
 problem solving and critical thinking answers are required from students within the first few weeks of schooling; regardless if it's a lab practical or a practicum.  
 "I do think they need to do more practical stuff that way the students get some of those nervousness (situations) decreased in the classroom."  
 "I don't know a good answer...but they need to demonstrate something (critical thinking) early on"
- Interview 7 Feels 12-14 month program is adequate length for a PTA program.  
 "I think schools can better prepare by (more real life specific scenarios).  
 " Gave example of progressing a mock patient throughout a four week treatment plan.  
 Feels there is a strong connection between the SPTA's critical thinking skills and being able to progress a patient appropriately.  
 "I'm trying to teach students how to progress patients. Teach them how to do what I am doing. I have to teach them to get to that point (where the student is autonomous)."  
 "I have to make sure they know why they're doing what they're doing"
- Interview 8 2 yr program (with 1 yr prior to program for Gen Eds. Like Washburn)  
 "I think that (2 yr program length) would better equip students to succeed in the critical thinking piece."  
 "I think (preclinical work) needs to be longer than a semester." "I think its more difficult for students to transition without having an example already laid before them." -re: progression (not sure how relates to?)

The CIs responded to what they perceived to be an adequate length of time within the classroom setting for a SPTA to develop and assess critical thinking skills into the following responses:

Two CIs said a two year PTA program after one year of general education was sufficient.

Two CIs said the SPTA critical thinking skill development and assessment should start immediately to within the first few weeks upon the SPTA's arrival in the classroom of the PTA program.

Two CIs did not respond with a specific length of time citing the differences in student's learning tendencies and that a time frame structure is limiting within the development and assessment of critical thinking skills of the SPTA.

One CI did not answer the question but stated that critical thinking skills must be evident within a SPTA by the time the student goes to the first clinical rotation.

### **Clinical Instructors Recommendations**

**Do you have recommendations on how critical thinking skills could be better assessed for PTA students?**

Several CIs suggested that more real life case scenarios and lab practicums would be helpful for the SPTA prior to the clinical rotations. CIs noted the SPTAs lack confidence and experience and that effects the development of critical thinking skills.

Finally the CIs were asked if they had any recommendations on how to assess critical thinking skills of the physical therapist assistant student. Table 4.17 are the responses:

Table 4.17

CIs recommendation on how critical thinking skills can be better assessed of the SPTA

Interview 1	"...the best is just watching and talking. They need that feedback, they need to know that you're understanding what they're doing..."
Interview 2	"Make them think about the connections between the activities." The example given was a hypothetical scenario of a patient needing to improve toe flexion. The SPTA needs to understand how toe flexion effects gait, standing, and balance and relate to the patient the

Interview 3	<p>“..several instructors of three different programs...are working ...on scenarios in class and problem solving. They (the students) are given a scenario and all of the choices are correct, but which one is the best choice; ....or what would do with this more complex patient when they arrive with their pain at 10 out of 10? I think that is good. Those real things that happen in the clinical setting.”</p> <p>“I want to see the difference between a year program and a two-year program.” I thought she was just as prepared. I think she was a lot more stressed out than my students from Washburn because at Washburn they were able to do all their prerequisites and then start the program.”</p> <ul style="list-style-type: none"> <li>• online class boards-prep type of class,</li> </ul>
Interview 4	<p>More real life practicals</p> <p>Longer rotations for students in the acute care setting</p> <p>Every student gets an acute care rotation</p>
Interview 5	<p>“they need to see more problems...a real world setting. It’s hard to see that in a classroom unless you have a pool of people you can choose from. Volunteerism”</p>
Interview 6	<p>“test them more and maybe add a little bit harder case scenarios and practicums with different situations and see how and what they would do, how they respond to it.”</p> <p>“Hold them accountable more for their observations, listening skills, quality of their tests and measures, and how well they execute their decisions on test treatments, practicums, etc.”</p> <p>“Too much information is crammed upon the SPTA in a short amount of time.”</p> <p>Recommended 200-300 hour internship before applying to PTA Program. “I think that would be big because you are going to weed out the people that don’t have time to do it or don’t want to do it. “</p>
Interview 7	<p>Recommends, “talking to someone who has previously been a CI was helpful.” Gave example of a SPTA and herself as the CI having conflict. She talked about it to another therapist who had been a CI and gave her recommendations on how to handle the situation.</p>
Interview 8	<p>Let students know that their CI will be looking for critical thinking and problem solving skills. “If students were aware of that, they’d be better quipped to want to think more critically. When students can ask the questions, get the feedback from their instructor, and then they can educate their patients as to why...that’s a big thing”</p> <p>“And make sure the CIs know, you need to ask students questions...having the student and instructor both engaged. Maybe like some type of survey or a student assignment for the instructor. Saying something like, ‘by the midterm of the clinical we’d like you to fill out this survey and then fill out the same survey at the end.’ That could be a way to benchmark it.”</p>

The CIs recommended the following suggestions: 1) More real life case scenarios, 2) More practicals and lab practicums, 3) Better communication between SPTA and CI with emphasis on feedback and CI understanding of SPTA's critical thinking skills, 4) CIs mentoring other CIs, 5) Let SPTA know CI will be looking for demonstration of critical thinking skills from the SPTA, 6) CIs engagement with SPTA by way of asking questions to facilitate critical thinking, 7) Longer acute care setting rotation, 8) Online courses during SPTA's rotation, 9) Extend length of PTA program to two years.

## **CHAPTER V**

### **SUMMARY, CONCLUSIONS, RECOMMENDATIONS**

#### **Summary**

The data from the review of literature suggests that the Clinical Performance Instrument (CPI) is too time consuming, too subjective, and the grading method using the CPI varies among Physical Therapist Assistant (PTA) Programs.

In order to adequately assess a Student Physical Therapist Assistant (SPTA) critical thinking skills, a Clinical Instructor (CI) must identify how the SPTA is developing and administering critical thinking, problem solving clinical behavior. Problems arise in several areas. There is not a clear, concise definition of clinical problem solving on the PTA-CPI in which criteria and boundaries are established to benchmark where the SPTA's critical thinking skills are. The SPTAs do not know the specifics of what the CIs are looking at in determining their critical thinking abilities. The CIs use the framework of Bloom's Taxonomy to define critical thinking and clinical problem solving.

The PTA-CPI has advantages. The CIs appreciate the online capacity of the CPI. This allows for the CIs to systematically complete, save information, and send to the SPTA's school upon completion, all through the click of a button. The disadvantages of the PTA-CPI the CIs reported is the amount of time required for completion, the

instrument is too broad and not setting specific, and comments are required in the text boxes in order to move to the next criterion.

The CIs described an adequate length of time for the SPTA to develop critical thinking within the clinical rotation as six weeks. Between the first and third weeks of the rotation, the SPTA demonstrates critical thinking, and by the end of the rotation the CIs reported they could assess the SPTA's clinical problem solving.

The CIs felt an adequate length of time for the SPTA to develop critical thinking within the classroom was too short. Most stated that critical thinking should happen from the start of the PTA program, however to develop and adequately assess a SPTA's critical thinking ability involves experience and confidence.

Recommendations by the CIs stated they feel the SPTA would greatly benefit from more lab practicals and real life case scenarios. Ideally this recommendation would happen prior to the SPTAs going to their clinical rotations.

## **Conclusions**

### **Defining Clinical Problem Solving**

The Clinical Instructors (CIs) defined critical thinking within the framework of Bloom's Taxonomy. (Bloom, 1956). All three domains, Cognitive, Psychomotor, Affective, were used in the CIs definitions. The Cognitive Domain was used the most and within that domain all six levels were used in defining critical thinking. The six levels in the Cognitive Domain are: Knowledge, Comprehension, Application, Analysis, Synthesis, Evaluation. The Psychomotor Domain has four levels and the definitions of critical thinking according to the CIs touched upon these levels as well. They are: Observation, Imitation, Practice, Adaptation. The category within the Affective Domain,

titled, Valuing, contained the most repetitive descriptive word the CIs used in defining critical thinking. That word is “confidence”. The other levels within the Affective Domain are: Receiving, Responding, Organization, Characterization.

The CIs were asked to describe their process of self-assessment and how often they critically think as a therapist. All the CIs stated they critically think daily. The CIs described their process of self-assessment as a sequential process. First they observe the patient’s environment. Then they formulate and define areas that need attention. Then they implement an intervention devised from clinical reasoning. The CIs expressed personal factors that affect how they observed, formulated, defined, and implemented reason. These factors were based on the CIs’ personal experience, patient’s verbal and nonverbal feedback, their rapport with their therapist co-workers, and their interpretation of data collection. When the CIs applied their definition of critical thinking to themselves within the clinical setting, their responses were reported as a sequential process. The findings place most CIs’ responses into the Stage Three: The Beginner Thinker of The Stage Theory Framework (Elder & Paul, 2010). This concluded that the areas for improvement are likely to challenge the therapist to dig deeper and be consistent with a systematic plan.

The CIs then defined clinical problem solving. They agreed that critical thinking and clinical problem solving were one in the same; however the context of critical thinking was done individually and the context of clinical problem solving was applied to the SPTA’s mental ability to critically think. Their definitions of clinical problem solving used Bloom’s Taxonomy (Bloom, 1956). The level of supervision was added to the clinical problem solving definition given by the CIs. The CIs define clinical problem



solving first by observing the SPTA's behavior and asking them questions that expose the SPTA's knowledge, comprehension, initiation, and skill. The CIs then looked at the SPTA's ability to apply and analyze information and how much supervision the SPTA required. Finally the CIs expressed that when a SPTA was able to synthesize and evaluate a patient correctly and give the appropriate intervention they then trust the SPTA and relinquish a case load to the SPTA. It is concluded the cognitive domain of Bloom's provides an appropriate framework for moving the SPTA to the high order of thinking levels. The psychomotor domain included responses that involved the hands on skill of physical therapy. However it was surprising to see how often the affective domain was used, especially in defining critical thinking. Half of the responses correlated a display of confidence with critical thinking.

The "Essentials Skills" listed on the PTA-CPI, #7 *Clinical Problem Solving* (APTA, 2009) was helpful when the CIs determined where the SPTA was with critical thinking skills in the clinic. The CIs seemed to appreciate the list as this prompts and guided them in criteria to look for in SPTAs. It is concluded that the guidelines provided within the essential skills was used by the CIs and gives some uniformity to the assessment tool of the PTA-CPI. This contributes to the validity and reliability of the instrument.

Clinical Instructors are consciously defining clinical problem solving within the cognitive domain. However, the frequent response of words such as, confidence, and communication, fall in the affective domain. It is concluded that CIs used the cognitive domain exclusively and neglected the affective domain when interpreting and defining critical thinking and clinical problem solving.

## **Rating SPTA's Critical Thinking Skills**

What do clinical instructors look at when rating a PTA student's mental critical thinking skills? First off they look at attributes the SPTAs should exercise when using critical thinking. The three attributes the CIs stated were categorized as skilled judgments, knowledge, and communication.

Secondly the CIs stated the considerations they use when assessing the SPTA's clinical problem solving on the PTA-CPI. Those considerations were, the SPTA's ability to explain rationale to their clinical behavior, level of needed CI supervision, and where the SPTA was within the PTA Program. Also, the CIs consider the SPTA's attributes of: skilled judgments, knowledge, and communication, when assessing the student's critical thinking.

Lastly the CIs described the SPTA's rationale when rating a PTA student's mental critical thinking skills. The CIs asked the SPTA questions. The SPTA's answer was then used to describe the SPTA's rationale by the CI. This response was categorized within the cognitive domain. The psychomotor domain was used as well in the CIs response of describing the SPTA's rationale. The CIs observed the SPTA's clinical behavior and interactions with the patient. The CI noticed how the SPTA took into account previous SPTA-patient encounters. Finally the affective domain was utilized when the CI described the rationale of the PTA student. However it is concluded the comments of some CIs were mere judgments and not descriptions of the SPTA's rationale. The influence of the CI's deeply held values was used to describe the SPTA's rationale; leading to descriptive judgments that the SPTA's rationale was lacking. As one CI stated, "the instructors count on the CIs to teach them a lot of the interventions. That's why

they're here... You're gonna make a lot of CIs upset because we don't want to babysit.”

In summary of the conclusion, the CIs responded in the cognitive domain when describing the SPTA's rationale and the CIs responded in the affective domain when defining a SPTA's clinical problem solving.

### **Advantages & Disadvantages of PTA-CPI**

Most of the CIs explained the advantages of the PTA-CPI as: established guidelines, definitions, and identifications of knowledge, application, analysis, synthesis, and evaluation. One CI stated the advantage of the PTA-CPI within the psychomotor domain by explaining the online ease and logistic of the instrument. Five of the CIs reported the advantages to be in the affective domain. The PTA-CPI allows for comments and the CIs reported values were often expressed in the comment box. This can be expressed in the form of feedback, compliments, reinforcements and stimulation of improvement ideas. Most of the CIs responses were a combination of all domains: cognitive, psychomotor, and affective.

The CIs felt the biggest disadvantage of the PTA-CPI was that it was time consuming with too many categories to fill out, takes time to understand the format of the CPI and to complete the training modules in order to access and use the PTA-CPI. Also, the CIs felt the CPI was redundant and repetitive adding to the rationale of the PTA-CPI being too time consuming.

The CIs stated another disadvantage of the PTA-CPI was that the logistics were not practical. Finding a computer and working on the PTA-CPI at work costs expected productivity time from the CI's employer.

Another disadvantage the CIs stated was that the PTA-CPI was too subjective. The CIs expressed concern that this subjectivity allows for their biases. Also the subjective creates an inconsistency between the SPTA self-evaluation of the PTA-CPI and the CI's evaluation.

It is concluded that the CIs are used to the format of the PTA-CPI. The familiarity of using the PTA-CPI creates an advantage of the PTA-CPI amongst all the CIs. All CIs use the online version. It is concluded that the biggest disadvantage of using the PTA-CPI is the time it takes to fill out and go over with the SPTA. CIs responded there were too many components within the PTA-CPI and in order for the appropriate data to be filled in, much time is spent scrolling through items that are not applicable to the rotation and comments are required in order to move onto the next screen of the PTA-CPI.

### **Critical Thinking Skills and Adequate Length of Time during Clinical Rotation**

The CIs responses were answered within the framework they have had to assess the SPTA's critical thinking skills within the clinical rotation. Those CIs who had a SPTA for a six week rotation were more apt to perceive an adequate length of time as six weeks, depending upon where the SPTA was at within the PTA program, the setting of the clinical rotation, and the experience of the SPTA. The one CI who had not experienced having had a SPTA for a six week rotation, placed a value on that length of time. Most CIs mentioned that by the third week, or midterm, the SPTA had demonstrated some ability of critical thinking. It is concluded by the CIs comments that they had assessed the SPTA's critical thinking skills by the midterm.

### **Critical Thinking Skills and Adequate Length of Time during Classroom**

The CIs responded to what they perceived to be an adequate length of time within the classroom setting for a SPTA to develop and assess critical thinking skills into the following responses: two CIs said a two year PTA program after one year of general education was sufficient; two CIs said the SPTA's critical thinking skill development and assessment should start immediately within the first few weeks upon the SPTA's PTA Program classroom arrival; two CIs did not respond with a specific length of time citing the differences in student's learning methods and a time frame structure was limiting for the development and assessment of critical thinking skills; and one CI did not answer the question but stated that critical thinking skills must be evident within a SPTA by the time the student goes to the first clinical rotation. It is concluded that developing critical thinking was considered crucial according to the CIs responses. However assessing the SPTA's critical thinking skills produced varied responses from the CIs. Most CIs felt the development and assessment of critical thinking skills should start in the classroom and continue throughout the duration of the PTA program, which included the clinical rotation segments.

### **Recommendations by Clinical Instructors**

The CIs recommended the following suggestions: 1) More real life case scenarios, 2) More practicals and lab practicums, 3) Better communication between SPTA and CI with emphasis on feedback and CI understanding of SPTA's critical thinking skills, 4) CIs mentoring other CIs, 5) Let SPTA know CI will be looking for demonstration of critical thinking skills from the SPTA, 6) CIs engagement with SPTA by way of asking questions to facilitate critical thinking, 7) Longer acute care setting rotation, 8) Online

courses during SPTA's rotation, 9) Extend length of PTA program to two years. It is concluded that the most beneficial recommendation is real life case scenario's in the classroom and more lab practicums to help develop critical thinking within the student.

### **Recommendations for Practice**

#### **True to Life Case Scenarios**

Several CIs interviewed recommended more real case scenarios and lab practicums for the SPTA. The CIs noted that the SPTAs were often nervous and lack confidence in their abilities when they first arrive at a clinical rotation.

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"This text was written specifically for the PTA student and is designed to be used across the curriculum of a PTA Program and especially to complement courses in pathology. It could also be used by new graduates or PTAs who have worked in the field for some time who are looking to change practice setting or just improve their critical thinking skills. The purpose of the text is to help students learn to think critically in order to make sound clinical decisions as PTAs. These skills can be difficult to teach and difficult to learn. Using simulated real-life cases and giving students an opportunity to work through them enable students to learn these skills and apply their "head knowledge" in the clinical situations they will encounter. It is my hope that students will be able to use the tools they already

have along with this textbook to help them gain confidence in making clinical decisions as a PTA.”(pg. vii)

The recommendation is to have the SPTA engage in critical thinking skills by way of using this textbook. The level of engagement could begin within the first week of the PTA program between the learner and the PTA faculty. The discussion format found throughout the textbook could easily be done as an online group discussion or assignment.

### **Valued Living Questionnaire**

The cognitive domain offers a taxonomy from lower level thinking to higher level thinking. This provides definitions and terminology for a CI to communicate to the SPTA a scaffolding plan for critical thinking skills. However, values are a motivator and defines an individual's behavior. Understanding one's values, beliefs, and communication is a behavior that constitutes the affective domain. The CIs would benefit greatly to learn what values the SPTAs have; and vice versa. The Clinical Coordinator in the PTA Program could pair up SPTAs with CIs who share the same values and beliefs.

The Valued Living Questionnaire (VLQ) identifies areas of an individual's life that they value (Wilson & Groom , 2002). The VLQ is an instrument that taps into 10 valued domains of living. These domains include: 1. Family, 2. Marriage/couples/intimate relations, 3. Parenting, 4. Friendship, 5. Work, 6. Education, 7. Recreation, 8. Spirituality, 9. Citizenship, and 10. Physical self-care. Respondents are asked to rate the 10 areas of life on a scale of 1–10, indicating the level of importance and how consistently they have lived in accord with those values in the past week. For detailed information on scoring the VLQ see Wilson and Murrell

(2004). It is recommended that CIs and SPTA fill out the VLQ. This information reveals what motivates the individual in terms of what they value. Motivators affect an individual's behavior. The CI and the SPTA would benefit knowing each other's values. This would provide a framework in communicating and understanding clinical behavior and rationale.

### **Six Core Critical Thinking Skills**

Wall's (2014) article, "The Transferability of Higher Order Cognitive Skills" asks, can higher order cognitive skills be transferred? Wall answers yes to the question, stating that if students are taught to make critical thinking a habit, that metacognition, where the student conscientiously chooses to engage in critical thinking to solve problems, will occur; thus creating a habit of critical thinking. Wall identifies the six core critical thinking skills which were formulated by The American Philosophical Association from forty six respondents. Those core critical thinking skills are: inference, recognizing assumptions, deduction, interpretation and evaluation of arguments. It is recommended that PTA students and PTA educators understand the elements of the critical thinking skills. Wall lists those elements as: 1) Identify the problem, 2) Clarify basic concepts, 3) Formulate the problem, 4) Formulate possible solutions, 5) Gather information, 6) Recognize assumptions, 7) Defend possible solutions, 8) Form a reasoned judgment, 9) Examine consequences.

In order for PTA educators to foster and encourage PTA students to critical thinking, one should engage in the habit of critical thinking. The elements listed above, suggest how to critically think. It is recommended for the CI to use questioning prompts in asking



the SPTA to further engage in critical thinking. Lugan (2008) has developed a critical thinking wheel in which questioning prompts are provided at all six levels within the cognitive domain. This type of Socratic Method dialog between the CI and SPTA provides a structure for the CI to move the SPTA towards the higher order thinking levels.

### **Suggestions for Future Research**

#### **Participation in Study**

As a researcher I was frustrated with PTA programs who lacked participation in this study. There are five PTA Programs in Kansas. One program was in suspension and not running at the time of this study. One program did not use the PTA-CPI as the assessment tool. Two programs did not submit names of clinical instructors as requested. The reason for one of the noncompliant programs was cited by the Clinical Coordinator as not feeling comfortable giving out names of their CIs. The other noncompliant PTA program showed lack of understanding by requesting an explanation survey on the content of this study. For future research, it is recommended that researchers contact those noncompliant and/or who chose not to participate and ask them what led to that decision and what might have enabled them to feel safe enough to join in the research (Knox & Burkard, 2009).

#### **Allow for Time**

The eight face-to-face interviews used in this study required ample time for travel. It is recommended that plenty of time be allotted to conduct this type of study in the future when conducting multiple in person interviews for data collection.

### **Assessing Critical Thinking of the Physical Therapist**

It is recommended for future research to look at critical thinking assessment of the physical therapist student. A compare and contrast study between critical thinking assessment and development of a PT student versus a PTA student would provide insight as to whether or not the duration of a PTA Program is sufficient.

### **Other States**

Future research is recommended to look at critical thinking assessment of the PTA student within other states. The PTA-CPI is the widely used assessment tool; however there are other assessment tools commonly used amongst regions within the nation. A replication of this study in other states allows for different assessment tools to surface providing areas for further research.

### **Critical Thinking Assessment of PTA Students by Others**

This study sought the perceptions from the Clinical Instructors view point. It is recommended to explore the viewpoints of: PTA Program faculty, Center Coordinators of Clinical Education (CCCEs), and Physical Therapist Assistants Students. It would be interesting to find out what others think of critical assessment and development of the PTA student.

### **Confidence and definition of Critical Thinking**

The Clinical Instructors responded that they perceived confidence as a component in defining critical thinking. The context of their response concluded that they perceive a certain level of confidence evident when critical thinking is applied. It is recommended that research be conducted to assess confident levels in a learner. Are learners too confident or not confident enough; and how does this affect their critical thinking skills?

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## APPENDIX

## **APPENDIX A- SURVEY INSTRUMENT**

### **Interview Questions**

1. What is your definition of critical thinking?
2. How are you defining Clinical Problem Solving on the PTA-CPI?
3. In your opinion, what are three important attributes a PTA student should possess when exercising critical thinking during a clinical rotation?
4. What are the considerations you use in assessing a PTA student's critical thinking when filling out the *CPI #7 Clinical Problem Solving*?
5. Explain the advantages of the PTA-CPI.
6. Explain the disadvantages of the PTA-CPI.
7. Explain the training you've received to prepare you as a Clinical Instructor.
8. How would you describe the rationale of the PTA student in terms of selecting the appropriate intervention for the physical therapy patient?
9. Describe an adequate length of time, within a clinical rotation, to develop and assess critical thinking skills within a PTA student.
10. Describe an adequate length of time, within a didactic classroom setting, to develop and assess critical thinking skills within a PTA student.
11. Do you have recommendations on how critical thinking skills could be better assessed for PTA students?

**Demographics:**

Type of Therapist:

- ☐ PHYSICAL THERAPIST
- ☐ PHYSICAL THERAPIST ASSISTANT

College Education

- ☐ ASSOCIATES and/or CERTIFICATION
- ☐ BACHELORS
- ☐ MASTERS
- ☐ DOCTORATE

Years worked as a therapist:

- ☐ 1-5 YEARS
- ☐ 6-10 YEARS
- ☐ 11-15 YEARS
- ☐ 16-20 YEARS
- ☐ 20 OR MORE YEARS

How many PTA students have you been the CI:

- ☐ 1-3 PTA STUDENTS
- ☐ 4-6 PTA STUDENTS
- ☐ 7-9 PTA STUDENTS
- ☐ 10 OR MORE PTA STUDENTS

How many PT students have you been the CI:

- ☐ 1-3 PT STUDENTS
- ☐ 4-6 PT STUDENTS
- ☐ 7-9 PT STUDENTS
- ☐ 10 OR MORE PT STUDENTS

Currently Employed:

- ☐ YES
  - ☐ PRN
  - ☐ PART TIME
  - ☐ FULL TIME
- ☐ NO

If currently employed, how long have you been with employer?

- ☐ 1-5 YEARS
- ☐ 6-10 YEARS
- ☐ 11-15 YEARS
- ☐ 20 YEARS & MORE

APTA Membership:

☐ YES

☐ NO

CI credentialed:

☐ YES

IF YES, DATE and LOCATION of CI TRAINING

COURSE: \_\_\_\_\_

\_\_\_\_\_

\_\_\_\_\_

☐ NO

## **APPENDIX B**

### **Cover Letter to Panel of Experts**

November 2, 2015

Dear Educator,

Physical Therapy Assistant students are assessed on their critical thinking skills. This is listed as criteria #7 Clinical Problem Solving, on the Clinical Performance Instrument (CPI). I am seeking research to determine specific information from Clinical Instructors as to what attributes they use in assessing a PTA student's critical thinking within the clinical rotation.

I am seeking your input as part of the panel of experts to validate the survey instrument designed for this study. You have been selected as one of the panel members. Please evaluate the survey based on the following criteria.

1. Read each statement and make sure you can understand its meaning.
2. Make suggested changes to improve how questions and statements are written.
3. Make suggestions to add or delete items to this survey.
4. Make suggestions to improve format and readability of this survey.

Please email all input to [trudyh@gus.pittstate.edu](mailto:trudyh@gus.pittstate.edu). Thank you for your time and assistance. It is greatly appreciated.

Sincerely,

Trudy Hansen  
Graduate student-Technical Teacher  
Pittsburg State University

## APPENDIX C

### Institutional Review Board (IRB)

#### **Pittsburg State University Application for Approval of Investigations Involving the Use of Human Subjects**

This application must be completed by the Investigator and sent to the Office of Graduate and Continuing Studies by the first Tuesday of the month during the fall and spring academic semesters to be considered for full review on the second Tuesday of the month.

Expedited and exempt reviews can be turned in any time. For questions about the review process contact Brian Peery in Russ Hall, #112, Ext. 4175.

1. Investigator(s) Name(s): Trudy Hansen
2. Department: Technology and Workforce Learning
3. Local Address: 119 E. Atkinson Ave Pittsburg, KS
4. Phone: 620-704-2192
5. E-mail Address: trudyh@gus.pittstate.ed
6. Project Title: Critical Thinking Assessment in PTA students
7. Expected Completion Date: Dec. 2016
8. Expected Starting Date Feb. 3, 2016

9. Is this project (check all that apply): Use review criteria in Form CR-1 to determine which category of review applies.

- ☐ Application for Full Review      ☐ Protocol Change      ☒ Thesis/Special Investigation
- ☐ Being submitted for external support      ☐ Continued Review      ☐ Application for Expedited Review
- ☐ Being conducted in a foreign country      ☐ Faculty Research      ☒ Application for Exempt Review
- ☐ Publishable research      ☐ A Class Project

10. If notification of human subject approval is required give date required: \_\_\_\_\_

Name of agency: \_\_\_\_\_

11. If you are a student, complete the following:

Faculty Sponsor: Dr. Julie Dainty

Department: TWL

Phone: 620-235-4033

\*\*\*\* If submitted externally, a complete copy of the proposal must be submitted to the IRB.\*\*\*\*



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### CERTIFICATION AND APPROVAL

**Certification by Investigator:** I certify that (a) the information presented in this application is accurate, (b) only the procedures approved by the IRB will be used in this project, (c) modifications to this project will be submitted for approval prior to use, and that all guidelines outlined in the PSU Policy and Assurance Handbook for the Protection of Human Research Subjects will be followed as well as all applicable federal, state and local laws regarding the protection of human subjects in research as outlined in Form VA-1.

Judy Hansen 2-8-16  
Signature of Investigator Date

**Faculty Sponsor:** If the Investigator is a student, his/her Faculty Sponsor must approve this application. I certify that this project is under my direct supervision and that I accept the responsibility for ensuring that all provisions of approval are met by the investigator.

Julie Darity 2-8-16  
Signature of Faculty Sponsor Date

**Department Review Committee Chair:** I acknowledge that this research is in keeping with the standards set by our department, university, state and federal agencies and I assure that the student principal investigator has met all departmental requirements for review and approval of this research.

Melissa Regan 02-10-16  
Signature of Department Review Committee Chairperson Date

[Signature] 3/9/16  
CPHRS Chairperson Date

#### I. Description of the Subjects (If advertising for subjects, include a copy of the proposed advertisement.)

A. How many subjects will be involved? \_\_\_\_\_

B. Subject Population (check all that apply) \_\_\_\_\_

☐ Adults    ☐ Prisoners    ☐ Minors    ☐ Mentally Retarded  
☐ Mentally Ill    ☐ Physically Ill    ☐ Disabled    ☐ Special Education    ☐ Other

C. For projects conducted in schools or school settings:  
(Written approval from the Building Administrator must be obtained)

What grade are the students in? \_\_\_\_\_

Approximate Age of Students \_\_\_\_\_

How many classes involved? \_\_\_\_\_