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The Hot Seat: Challenging Critical Thinking and Problem Solving Skills in Physical Therapist Students

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ABSTRACT

Purpose: Allied health profession students must develop critical thinking and problem solving skills to be able to make clinical decisions. The purpose of this paper is to describe an educational model used in a physical therapist education program to improve students' confidence in clinical decision-making. **Methods:** The faculty chose topics for each forum and invited specific clinicians to present actual clinical cases to students in small group settings. The small groups spent 30 minutes focused on each case, and then rotated to a different clinician so each had exposure to three scenarios. After presenting subjective clinical information, the clinicians asked open-ended questions designed to encourage the students to think critically and to problem solve using the Patient/Client Management Model. **Assessment of Model:** Preliminary assessments were completed using a survey and large group debriefing. Survey responses identified that students perceived the forums as beneficial for improving their confidence with critical thinking and problem solving skills. Students identified the forums as a strength of their educational program in debriefing sessions. **Conclusion:** An educational forum is a teaching method that places students in a situation where they are required to exercise their clinical reasoning skills. The authors believe this interactive educational method can be adapted to improve students' confidence in clinical reasoning in any allied health profession education program.

INTRODUCTION

For allied health professionals, each day in the clinic involves ongoing clinical reasoning and clinical decision making. These decisions are a result of the critical thinking and problem solving done by health professionals who integrate information gained from subjective and objective data obtained from patients/clients. New graduate physical therapists are expected to exhibit entry level clinical reasoning skills, but must further develop these skills to transition from novice to expert clinicians.^{1,2}

Clinical reasoning skills (including critical thinking, problem solving and clinical decision-making skills) need to be integrated into physical therapist education, as these skills are essential for the entry-level student as the profession moves towards the American Physical Therapy Association's (APTA) Vision 2020 and autonomous practice.^{1,2} Exposure to and acquisition of critical

thinking and problem solving skills are prevalent in entry-level physical therapist education.³⁻⁹ According to Beck et al, the integration of information is the pinnacle of independent, mature professional development and clinical learning.⁹ Utilization of the Hypothesis-Oriented Algorithm for Clinicians, for example, may be part of foundational courses as a visualization model of how to begin clinical reasoning and the decision making processes.¹⁰ Other techniques are also employed to develop logical sequencing of information toward making an appropriate decision.¹¹⁻¹²

Clinical reasoning skills, critical thinking, problem solving, and decision-making abilities develop over the course of time. In terms of education, learning occurs over multiple domains. Physical therapy educators most commonly use the cognitive (thinking or knowledge), affective (feelings or attitudes), and psychomotor (hands-on skills) domains.^{13,14} At Clarke College, the faculty noted that during clinical experiences, many students possess knowledge in the cognitive domain, but struggle when integrating cognitive with affective and psychomotor abilities. The students' clinical instructors rely on fundamental, background knowledge combined with experience that support the two other domains, thus enabling problem solving and appropriate decision making.¹³ This "craft knowledge"¹⁵ in clinicians allows for interpretation of data that may be incomplete but intuitively related. A goal for educators is to introduce ways for student physical therapists to acquire this type of knowledge and integrate critical thinking and problem solving skills into practice as they transition to novice physical therapists.

Profetto-McGrath¹⁶ suggests that critical thinking can be developed through a number of approaches including problem-based learning (PBL), role modeling, reflective journaling, and journal clubs. In PBL, students also use clinical cases for learning; however, students are responsible for searching for peer-reviewed journals to answer questions posed by the instructor.¹⁶ When role modeling, the educator creates "a learning environment that fosters critical thinking, self-reliance and independence, and questioning."¹⁶ Faculty may want to consider developing other novel approaches or using a combination of established approaches to encourage critical thinking in students in a classroom setting.

While critical thinking and problem solving are essential components of clinical reasoning, self-confidence in hands-on skills and the ability to make the correct judgment independently are also necessary for clinical reasoning. Etheridge completed a study of recent nursing graduates who identified confidence as an important theme in developing skills to become an expert nurse.¹⁷ The transition from student to novice practitioner improved with multiple clinical experiences, as well as with support from faculty and experienced nurses. White also identified gaining confidence in skills as a major theme associated with improving clinical decision-making by nurses; this was reaffirmed by Radwin.¹⁸⁻¹⁹ With more experience, confidence increased, allowing for more choices to be considered in the clinical decision-making process. A study by Cioffi and colleagues demonstrated that by using case simulations where student nurses were able to think aloud, students improved confidence in clinical decision-making compared to students who had only received lectures on the same topic.²⁰ These authors suggested that this type of strategy allows for deeper learning.

Based on this theme, a need exists to develop classroom activities that will improve self-confidence in clinical decision making. The purpose of this paper is to describe an educational method used in a physical therapist education program to improve physical therapist students' confidence in clinical decision-making.

METHODS

Description of Model

During regular program assessment, the faculty at Clarke College, Doctor of Physical Therapy (DPT) program, developed a series of Clinical Problem Solving Forums based on the Patient/Client Management Model. Physical therapist students are taught to use the Patient/Client Management model which consists of patient/client examination, evaluation, diagnosis, prognosis, interventions, and outcomes.^{21,22} In clinical practice, physical therapists complete an examination that includes patient history, review of systems, and tests and measures as defined by the *Guide to Physical Therapist Practice*.²¹ In the evaluation process, the therapist takes information gathered during the examination to develop a problem list which leads to the physical therapy diagnosis, prognosis, and potential interventions. Clinical reasoning skills are used throughout this process. The faculty proposed that the forums would improve confidence in students' clinical reasoning by allowing students to discuss actual patient cases with experienced clinicians. Additional proposed benefits to the forums can be found in Table 1. The forums were implemented in the Fall of 2005 and have continued in various formats through the present. See Appendix C for evolution of the forums.

Table 1. Proposed Benefits of the Clinical Problem Solving Forum

- Allow clinicians and students to communicate regarding examination, evaluation, diagnosis, prognosis, and interventions for actual patients (confidentiality upheld) and also challenge students to improve skills in these areas.
- Offer students the opportunity to observe and participate in problem solving actual cases that clinicians had experienced.
- Provide clinicians opportunity to share information with each other and with students.
- Assist in preparing students for difficult cases that they might encounter once licensed, particularly if practicing with direct access.
- Improve confidence in students' clinical reasoning by discussing actual patient cases with local clinicians.

The topics for each Forum were different. Topics ranged from simple to complex musculoskeletal, neuromuscular, pediatric, geriatric, cardiopulmonary, and integumentary diagnoses in a variety of settings. Once the topics were chosen by the faculty, local physical therapists were invited to present clinical cases to students from the Clarke College, Physical Therapist Education Program in small group settings at five separate forums each academic year. Clinicians were asked to present a case in a forum if their primary clinical work was related to the selected topic. All of the physical therapists who agreed to participate had at least two years of experience and most had prior experience as clinical instructors. The number of clinicians invited varied in order to maintain an approximate ratio of six students per therapist. Clinicians who participated in more than one forum presented different cases each time.

Each clinician was assigned to a student group, which was comprised of three to six students with different levels of academic preparation. Students from each cohort were divided equally amongst the groups. The students were provided with nametags that included the year of the cohort so clinicians were aware of their level of physical therapy education. Students with more education were expected to participate at a higher level than less experienced students.

Students were aware of the topic, but not the specific diagnoses that would be discussed prior to arrival at the forum. Each small group spent 30 minutes with each clinician discussing the case. Following a brief patient background, the clinicians asked the students to discuss examination techniques that they would employ if they had been responsible for examining the patient. Clinicians would selectively direct questions at individual students to help ensure participation from each student. Thus, the forums took on the nickname "Hot Seat" because individual students were asked to respond quickly to information given. After working through the cases, the clinicians then provided results for the original history and review of systems, plus tests and measures administered to enable students to perform a physical therapy evaluation and determine a physical therapy diagnosis. The clinicians challenged the students to develop a prognosis (including plan of care) and discuss interventions that would be appropriate for the case. Each group was exposed to three cases from three different clinicians in one evening.

The clinicians were expected to put each of the students in their group on the "Hot Seat" by asking open-ended, clinically oriented questions to challenge the student to think critically and to problem solve using the Patient/Client Management Model.²¹ The use of this model in the forums was designed to encourage the students to clinically reason in a systematic manner.¹⁶ One objective of the forums was to encourage students to practice their clinical reasoning skills by applying the Patient/Client Management Model to case scenarios. Another objective was to increase student confidence in clinical decision-making for carryover to a true clinical setting. A sample case and questions asked is included in Appendix A.

ASSESSMENT OF LEARNING EXPERIENCE

In order to assess the learning experience, the authors gathered preliminary data regarding effectiveness of the forums from a sample of students during two forums in the Fall 2006 semester. All students had previously participated in at least one forum. A one-page pre-test/post-test survey consisting of nine statements was drafted (see Appendix B). A ten centimeter visual analog scale (VAS), with disagree and agree as the anchors, was used for responding to the statements on the survey. The survey was initially constructed for a similar learning exercise offered a year earlier. Following analysis of the original tool, five faculty members took the tool through a series of revisions to improve the tool's ability to measure the objectives and to help establish content validity. The faculty determined that the statements satisfied the content domain of the assessment's purpose, thus permitting face validity.

Currently, all students participate in the forums for five semesters during the three year DPT program. In each Fall semester, the first year group has limited or no actual clinical experience and is still taking foundational science courses. Hence, they attend the forums to introduce them to this type of learning experience and to see what will be expected of them in the future. At the time of assessment, the second and third year students in Clarke College, Physical Therapy Program had already participated

in full time clinical experiences. These students have participated in two forums and six forums, respectively. Therefore, the students have experienced a basic framework for using clinical reasoning skills and were chosen to participate in assessing the "Hot Seat" forums. They completed the survey prior to participation in the first clinical forum of Fall 2006. Following the second clinical forum, these students were asked to complete the same survey. Participation in the assessment survey was voluntary. Ninety-six percent of the second and third year students who participated in both forums completed both surveys (n=23). The institutional review board at Clarke College approved the study and all students signed informed consent and release forms allowing their feedback to be published.

Students received the pre-test survey the day before the first fall semester forum and post-test survey the day after the second forum. Students replied to the surveys using a four-digit identification number for anonymity. Marks on the VAS were measured to the nearest millimeter. To reduce measurement error resulting from multiple assessors, results were measured and tabulated by a single person. Please refer to Table 2 for descriptive statistics from each administration of the survey. Data suggest that there was a modest improvement in students' confidence as evidenced by improved scores on survey statements from pre-test to post-test. The areas where students improved the most included feeling prepared for difficult cases in the clinic (30% increase), confidence in using critical thinking skills (24% increase), and developing a prognosis including plan of care (25% increase).

Table 2. Descriptive Statistics of Clinical Forum Survey Results (September and November 2006)

Survey Statements	Pretest Mean ±SD (mm)	Posttest Mean ±SD (mm)	Mean difference (mm)	Percent change
I feel prepared for difficult cases that I may encounter once I am practicing physical therapy.	46±17	60±13	+14	30%
I know how to utilize information from my academic learning in real life situations.	62±16	68±12	+6	10%
I have been challenged to critically think about cases in physical therapy.	64±13	73±13	+9	14%
I am confident in my critical thinking skills regarding complex cases in physical therapy.	51±14	63±16	+12	24%
I struggle with putting together pieces of physical therapy information to apply to the "whole patient."	39±16	40±19	+1	3%
I am able to develop strategies for successful patient examination.	63±14	67±12	+4	6%
I am able to develop strategies for successful patient evaluation.	59±16	68±13	+9	15%
I am able to develop strategies for successful patient prognosis.	53±16	66±13	+13	25%
I am able to develop strategies for successful patient interventions.	62±12	70±12	+8	13%

N=23

Qualitative data was gathered from the same group that participated in the survey at a curriculum debriefing prior to graduation. As a cohort, students were asked to identify strengths and weaknesses of the DPT program. At the debriefing, a student proposed the "Hot Seat" as a strength of the program. The entire cohort (n=15) strongly agreed. Students were then asked why they thought the "Hot Seat" was a strength. A major theme that emerged from the debriefing was that the "Hot Seat" was beneficial to the development of clinical reasoning skills. More specifically, the forums allowed for experienced clinicians to confirm that the students' decision-making process was correct when exposed to real cases. Moreover, they considered the "Hot Seat" to be an enjoyable experience. While this learning experience was not offered for credit, the students' expressed interest in continued participation in the "Hot Seat". One student expressed his opinion:

"The hot seat was a great thing for us to do as student physical therapists. It was a direct application to what is done in the clinic. We were put on the spot and made to critically think on our feet, which is what we do in the clinic. It also was a great way for us to pick clinicians' brains about a particular patient. It is not often we have the opportunity to talk about one patient for 20 minutes with a clinician. It was nice to be able to see how they perceived the patient and what was going on with them. Thanks for the opportunity!!"

DISCUSSION

Clinical reasoning is an essential skill for physical therapists and other health professionals. Students are exposed to this skill in the didactic portion of academic curricula and it is reinforced and integrated during clinical education experiences.^{3-8,23} Etheridge and White suggest that some students and new graduates struggle with clinical reasoning because they lack confidence in their ability to critically think and problem solve.¹⁶⁻¹⁷ At times they are unable to “hit the ground running” at graduation, in spite of being scored at entry level for skills on a tool used to assess performance during their clinical experiences.²³ Because of health care costs and productivity expectations, mentoring of entry-level clinicians is limited.²³ New graduates are expected to use evidence in clinical decision-making immediately despite decreasing mentorship.

Evidence-based practice is a combination of best evidence, patient values, and clinical experience.^{16,24,25} Critical thinking is an essential component of evidence-based practice.¹⁶ In the classroom, faculty members teach students to critically appraise literature to find the best evidence. Clinicians share patient values and clinical experience with the students in the forums. The “Hot Seat” allows for students to improve confidence in critical thinking by applying this information to the cases using the Patient/Client Management Model. This was supported by the survey results, which showed the students perceived the forums as improving their confidence in using their critical thinking skills (24% increase). When considering the results of the survey, all of the students reported that they felt that the forums helped them utilize information from their academic learning in real life situations (10% increase). Furthermore, the students felt better prepared for difficult cases that they may encounter in the clinic (30% increase). The students also showed an improvement in using the Patient/Client Management Model. While they showed an increase in all statements related to this model, the largest increases were related to evaluation (15%), prognosis (25%), and interventions (13%). Although these changes are modest, the change occurred over the course of only one month. The time invested by faculty to run each forum was approximately 4 hours including time to recruit clinicians and supervise the evening sessions. The authors believe that the improvements seen in confidence are well worth this small time investment. Before implementation of this model, an educational program would need to assess whether the “Hot Seat” would work in their given situation.

As previously discussed, problem-based learning (PBL) and role modeling can be used for developing critical thinking skills.¹⁶ The “Hot Seat” adapts the PBL and role modeling approaches. The Hot Seat is unique in that it expects students to apply knowledge quickly to a case scenario without having time to review pertinent literature. Students utilize knowledge gained in courses, previous exposure to relevant literature, and understanding gained from prior clinical experiences to answer questions about case scenarios presented by clinicians. The students are “put on the spot and made to critically think on [their] feet.” The students do not know the specific diagnoses that will be presented in the case scenarios prior to the presentation. This creates a more realistic learning environment, as many times the students will not know the problem prior to seeing the patient. The clinicians serve as role models in the development of critical thinking, as described by Profetto-McGrath.¹⁶

One of the purposes of the forums was to share real-life examples that would facilitate confidence in the students’ ability to manage simple and complex cases. Students were exposed to fascinating cases, some of which were difficult to interpret. The use of real cases, already experienced by clinicians, allowed students an opportunity to practice clinical decision-making skills by unraveling and synthesizing information. Clinicians guided the discussion and eventually shared how the case had actually progressed along with outcomes. By working in small groups, clinicians were encouraged to actively involve all students, which is more difficult to do in a traditional class setting. It was proposed that the forums would improve students’ confidence in their clinical reasoning by discussing actual patient cases with local clinicians. The cases presented all reinforced concepts that are presented in class. The results of the survey and debriefing session suggest that the students felt more confident in successfully managing a case using this model following the forums.

The forums also encouraged intelligent dialogue between clinicians and students. As stated earlier, emergence of critical thinking, problem solving, and decision-making abilities develops over the course of time. Confidence in all these areas comes with practice and repetition.^{16,17} Because clinicians have had time to develop these skills, they are able to share their experiences to foster critical thinking and problem solving in students. The “Hot Seat” challenges students by discussing actual patient cases that are complex because of co-morbidities, differential diagnosis, or medical complications. The authors believe these concepts can be easily adapted to other allied health professions by focusing on cases unique to each profession.

The limitation of the learning experience primarily has to do with clinician involvement. The program requires availability of clinicians who volunteer to participate. These clinicians are rewarded only with a simple meal and the satisfaction of helping students learn. It can be challenging to convince clinicians to become involved in the program, which limits the diversity of willing clinicians. Recruitment of volunteers can take up to two hours of faculty member work time. However, in this study, it was discovered that once clinicians have participated in the program, they are generally happy to participate again.

Despite the limitation of using a voluntary workforce, the benefits of the learning experience have led to the continuation of the forums. The students perceive this experience as a strength of the program that improved their confidence in clinical reasoning. The physical therapist education program has seen benefits from the involvement of local clinicians in the forums. Many of these clinicians have become more invested in the education program by accepting students in the clinic for internships, by accepting positions on our advisory board, and by providing guest lectures in their area of expertise. Clinicians have also commented positively on the networking opportunities between clinicians and faculty.

In the future, patients could be invited to participate in the sessions to enhance the learning experience. This may limit the variety of cases that can be shared, but would allow students to practice examination skills. Another variation that could be implemented is informing the students about the diagnoses that will be discussed so they are able to complete searches of the literature prior to the session. Currently, we have chosen to not notify the students of the specific diagnoses prior to the session so they have to rely on the knowledge they already have instead of studying for the session.

In conclusion, the physical therapy education program at Clarke College has found that this educational model has been a valuable addition to the curriculum. Students reported that the Clinical Problem Solving Forums were beneficial in improving their confidence about their ability to clinically reason. This teaching method also allowed local clinicians to actively participate in the education of entry-level physical therapists. This collaborative model of education was dynamic and exciting for students, clinicians, and faculty who participated. The authors believe this interactive educational method can be used to improve students' confidence in clinical reasoning in any allied health profession education program.

REFERENCES

1. APTA Vision Sentence for Physical Therapy 2020 and APTA Vision Statement for Physical Therapy 2020 HOD P06-00-24-35. Available at: <http://www.apta.org> Accessed on March 30, 2006.
2. Jensen G, Gwyer J, Shepard K, Hack L. Expert practice in physical therapy. *Phys Ther.* 2000; 80:28-43.
3. Watts NT. Decision analysis: a tool for improving physical therapy practice and education. In: Wolf SL, ed. *Clinical Decision Making in Physical Therapy*. Philadelphia, Pa: FA Davis Co; 1985:7-23.
4. Leighton RD, Sheldon MR. Model for teaching clinical decision making in a physical therapy professional curriculum. *J Phys Ther Educ.* 1997; 11(2):23-30.
5. Gillardon P, Pinto Zipp G. A proposed strategy to facilitate clinical decision making in physical therapist students. *J Phys Ther Educ.* 2002; 16(2):57-63.
6. Portney LG. Evidence-based practice and clinical decision making: it's not just the research course anymore. *J Phys Ther Educ.* 2004; 18(3):46-51.
7. Plack MM, Santasier A. Reflective practice: a model for facilitating critical thinking skills within an integrative case study classroom experience. *J Phys Ther Educ.* 2004; 18(1):4-12.
8. Vendrely A. Critical thinking skills during a physical therapist professional education program. *J Phys Ther Educ.* 2005; 19(1):55-59.
9. Beck S, Youngblood P, Stritter FT. Implementation and evaluation of a new approach to clinical instruction. *J Allied Health.* 1988;17:331-340.
10. Rothstein JM, Echtermach JL. Hypothesis-oriented algorithm for clinicians: a method for evaluation and treatment planning. *Phys Ther.* 1986; 66:1388-1394.
11. Ross EC, Anderson EZ. The evolution of a physical therapy research curriculum: integrating evidence-based practice and clinical decision making. *J Phys Ther Educ.* 2004;18:52-57.
12. Slavin MD. Teaching evidence based practice in physical therapy: critical competencies and necessary conditions. *J Phys Ther Educ.* 2004;18:4-11.
13. Ford CW, ed. *Clinical Education for the Allied Health Professions*. St. Louis, MO: CV Mosby Co; 1978.
14. Shepherd KF, Jensen GM, ed. *Handbook of Teaching for Physical Therapists, 2nd ed.* Boston, MA: Butterworth Heinemann; 2002.
15. Higgs J, Titchen A. The nature, generation and verification of knowledge. *Physiotherapy.* 1995; 81:521-530.
16. Profetto-McGrath J. Critical thinking and evidence-based practice. *J Prof Nurs.* 2005;21:364-371.
17. Etheridge SA. Learning to think like a nurse: stories from new nurse graduates. *J Contin Educ Nurs.* 2007;38:24-30.
18. White AH. Clinical decision making among fourth-year nursing students: an interpretive study. *J Nurs Educ.* 2003;42:113-120.
19. Radwin LE. Empirically generated attributes of experience in nursing. *J Adv Nurs.* 1998; 27:590-595.

20. Cioffi J, Purcal N, Arundell F. A pilot study to investigate the effect of a simulation strategy on the clinical decision making of midwifery students. *J Nurs Educ.* 2005; 44:131-134.
21. Guide to Physical Therapist Practice. 2nd ed. *Phys Ther.* 2001;81:9-744.
22. American Physical Therapy Association. *A Normative Model of Physical Therapist Professional Education: Version 2004.* Alexandria, VA: APTA;2004.
23. Foord-May L. A faculty's experience in changing instructional methods in a professional physical therapist education program. *Phys Ther.* 2006;86:223-235.
24. Johnson C. Highlights of the basic components of evidence-based practice. *J Manipulative Physiol Ther.* 2008; 31:91-92.
25. Brady N, Lewin L. Evidence-based practice in nursing: bridging the gap between research and practice. *J Pediatr Health Care.* 2007; 21:53-56.

Appendix A: Sample Case Scenario

Scenario: You are working in an inpatient acute rehabilitation setting. Your patient is a 22-year-old male college student who was celebrating his birthday with friends when he fell off a 2nd story balcony sustaining a traumatic brain injury and compound ankle fracture. He has been in a coma for approximately 2 weeks prior to the physical therapy referral. He is to maintain **strict** non-weight bearing on his right lower extremity. He is confused, agitated, and restrained. Your referral reads to begin mobilization.

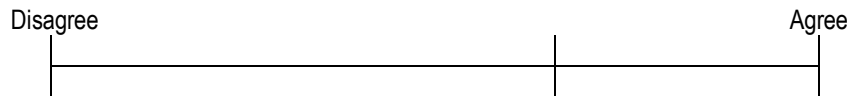
Questions: These vary among presenters, but all students are expected to utilize the Patient/Client Management Model as outlined by the Guide to Physical Therapist Practice. Sample guiding questions include:

- Where do you want to begin with your examination?
 - Students are expected to discuss what information they would seek for history, review of systems, and tests and measures. Clinicians provide information about the patient as the students identify what further information they would seek out.
- What problems have you identified and how would you prioritize these problems?
 - Students complete the evaluation portion of the Patient/Client Management Model.
- What is the Physical Therapy diagnosis for this patient?
 - Students cluster signs and symptoms to develop a working physical therapy diagnosis.
- Based on the problems identified, discuss this patient's prognosis.
 - Students discuss the short term goals, long term goals, duration, frequency of treatment, and the likelihood of achieving goals.
- What interventions would you use for this patient?

Clinicians provide additional information to students as needed. At the end of each session, the clinicians also describe the outcomes that were achieved with the patient.

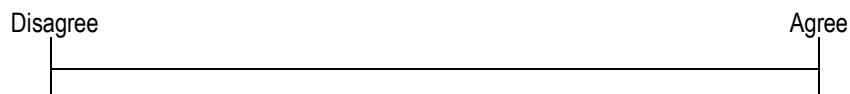
Appendix B: Clinical Forum Survey**CLINICAL FORUM SURVEY**

Please place one vertical line on the Visual Analog Scale (VAS) at the appropriate point indicating your evaluation rating. See example:

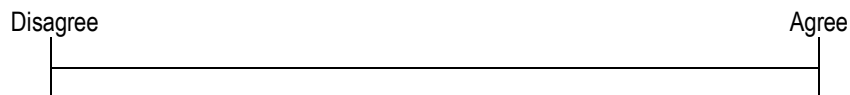


Marking the VAS requires you to use your professional judgment to determine your evaluation of each question.

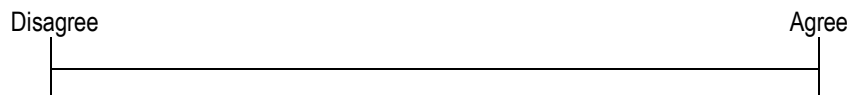
1. I feel prepared for difficult cases that I may encounter once I am practicing physical therapy.



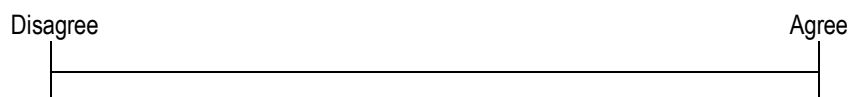
2. I know how to utilize information from my academic learning in real life situations.



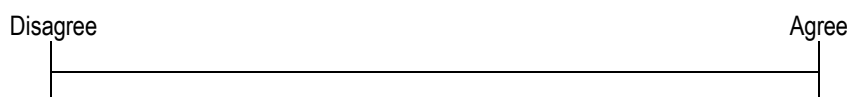
3. I have been challenged to critically think about cases in physical therapy.



4. I am confident in my critical thinking skills regarding complex cases in physical therapy.



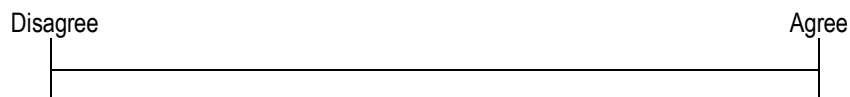
5. I struggle with putting together pieces of physical therapy information to apply to the "whole patient."



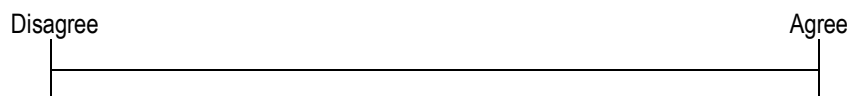
6. I am able to develop strategies for successful patient examination.



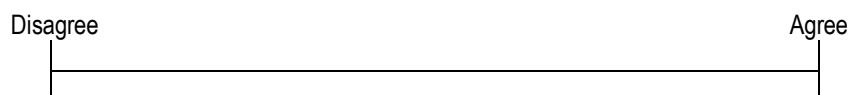
7. I am able to develop strategies for successful patient evaluation.



8. I am able to develop strategies for successful patient prognosis.



9. I am able to develop strategies for successful patient interventions.



Appendix C. Evolution of the Hot Seat

Fall 2005

Participants:
Year 2 n=12
Year 3 n=7

- September Topic: Musculoskeletal
Groups of 3-4 students; Students were able to actively participate in cases. Sample diagnoses included low back pain, shoulder and knee injuries, sacroiliac dysfunction
- October Topic: Acute Care
3 groups (stroke, wound care, complex acute); Students were provided with a chart review, but somewhat limited active participation
- November Topic: Ethics
Large group discussion limited student's ability to actively participate, became a panel discussion among clinicians

Spring 2006

Participants:
Year 1 n=17

- April Topic: Simple Acute Care
Small groups (3-4 students). Sample diagnoses include total hip replacements, total knee replacements, and deconditioning.

Fall 2006

Participants:
Year 2 n=17†
Year 3 n=7†

- September Topic: Musculoskeletal** (extremities)
- October Topic: Neuromuscular** (including geriatrics, pediatrics, and general neurological diagnoses)
- November Topic: Mock Interview
Year 3 students were interviewed by local PT managers. Year 2 students observed, but also participated in discussion at the end of the interview with the manager.
**Year 1 n=20 observers at Orthopedics and Neurology sessions

Spring 2007

Participants:
Year 1 n=20
Year 2 n=15

- March Topic: Potpourri (including Nursing Home, Delegation to the Physical Therapist Assistant, Team Approach)
- April Topic: Simple Acute and Complex Cardiac
Groups were split up by cohorts. Year 1 students worked on simple acute cases while Year 2 students worked on complex cardiac cases.

Fall 2007

Participants:
Year 2 n=19
Year 3 n=17

- September Topic: Musculoskeletal** (emphasis on extremities)
- October Topic: Neuromuscular** (Geriatrics and Pediatrics)
- November Topic: Musculoskeletal** (emphasis on spine)
**Year 1 n=30 observers (10 observers at each session, each student observes once.)

Spring 2008

Participants:
Year 1 n=26
Year 2 n=19

- March Topic: General Neuromuscular
- April Topic: Simple Acute and Complex Cardiac
Groups were split up by cohorts. Year 1 students worked on simple acute cases while Year 2 students worked on complex cardiac cases.

†Students who participated in assessment of the learning model