

# Impact of Faculty Development on Physical Therapy Professors' Beliefs

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*Physical therapy faculty share similarities with faculty across allied health fields, such as nursing, and other clinical disciplines that educate students in licensing and board certification programs. Most have clinical experience and discipline-based expertise, however they may not have had the benefit of continuous learning aimed at enhancing their teaching repertoires. Because of the rapid influx of clinicians into the academy, faculty development is considered essential to their integration. The purpose of this study was to describe how faculty development impacted physical therapy professors' understanding and use of new instructional skills. Eight physical therapists from a university located in the Southeast U.S. participated in a six-week, 12-hour teaching seminar focusing on curriculum and teaching where participants kept reflective journals to record their responses to question prompts. Basic unitizing, coding, and categorizing were used to conduct a multi-stage analytical process. Eight themes emerged including assessment, instructional strategies, teaching styles, and individuals' planned changes to their classroom practice, among others. Findings showed that professional development is essential for enriching faculty instructional capacity to promote student learning and patient care. Investing in the professional development of faculty may help ensure quality teaching so that professors become conduits to knowledge production.*

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Faculty development is “the continuous learning that professionals may need to pursue throughout their careers in order to maintain, enhance, and broaden their professional competence” (Gottlieb, Rogers & Rainey, 2002, p. 280). Studies in physical therapy, and other health professions, have shown that the faculty development process is central to effective teaching and the preparation of future healthcare practitioners and professional educators (Behar-Horenstein, Childs, & Graff, 2008, 2009, 2010; Farmer, 2004; Mahara & Jones, 2005, Steinert et al., 2006). Keeping physical therapists continuously informed about new knowledge, skills and technology is essential to their capacity as instructors.

Historically physical therapy (PT) programs have been disadvantaged. They have been forced to hire an overwhelming number of clinicians as faculty rather than individuals who have been trained in higher educational instruction and assessment (Harrison, & Kelly, 1996). Most of the clinical instructors, while quite skillful, often lack teaching abilities (Gottlieb, Rogers & Rainey, 2002). Hiring clinicians resulted because universities were in the initial stages of developing physical therapy degree programs. Such an action highlights the importance of developing a mechanism to continuously determine faculty effectiveness and productivity. Faculty development can help new faculty examine their own beliefs about teach-

ing and consider how they might apply their thinking. New faculty from clinical disciplines are often different from traditional academicians who earn several degrees and typically experience graduate student teaching and research roles aimed at faculty-type expertise.

The American Physical Therapy Association's (APTA) former director of professional development, Marilyn Phillips, encourages the use of faculty development. This process can be a vehicle to create one's own plan or “blueprint for career development” (Starcke, 2005, p. 42). APTA's Board of Directors acknowledges varied modes of faculty development including where and how it can occur. “[It] may occur in formal instructional settings or in natural societal settings and may include ...academic courses of study, organized continuing education, independent study, and self- and external assessment” (p. 42). Although some individuals benefit from structured activities, others may work on their own plan of professional growth. However, the APTA directors emphasize the role of assessment in professional development stating, “All professional development experiences should be planned and assessed” (p. 42). Also, self-assessment is crucial for instructors because it offers an avenue to evaluate their strengths and weaknesses, and helps identify stages of faculty development.

The APTA accreditation handbook (APTA, 2011a)

also acknowledges the importance of professional development to support new faculty research and teaching and stresses the program administrator's role in providing leadership in this capacity. According to the handbook,

F-3. "Each *core faculty* member has a well-defined, ongoing *scholarly agenda* that reflects contributions to: (1) the development or creation of new knowledge, OR (2) the critical analysis and review of knowledge within disciplines or the creative synthesis of insights contained in different disciplines or fields of study, OR (3) the application of findings generated through the *scholarship* of integration or discovery to solve real problems in the professions, industry, government, and the community, OR (4) the development of critically reflective knowledge about *teaching* and learning, OR (5) the identification and resolution of pressing social, civic, and ethical problems through the scholarship of engagement" (B-10).

A recent comprehensive review of the PT profession (APTA, 2011b) recognizes the importance of "professional development, continuing competence and lifelong learning as integral to the provision of current, evidence-based, high-quality patient care. Programs such as clinical residencies, clinical fellowships, and certified clinical specialization allow PTs to expand their expertise within defined areas of practice, or specialties" (p. 3). Regulatory authorities such as the "Citizen's Advocacy Center (CAC) recommend that state legislative action [among other directives]:

- mandate that as a condition of relicensure, licensees participate in continuing professional development programs approved by their respective health care board;
- mandate that continuing professional development programs include (a) assessment; (b) development, execution, and documentation of a learning plan based on the assessment; and (c) periodic demonstrations of continuing competence" (p. 22).

In a study of early career PT faculty, Harrison and Kelly (1996) found that they felt "overloaded, unsupported and uninformed" (p. 1204) due to the lack of faculty development programs. Most of their time was spent on teaching, research, and service yet absent from their job were feedback from formal faculty evaluations and collegiality. Barnes as cited in Woods (1993) reported, "the profession isn't far enough along where we can afford not to nurture and help develop faculty" (p. 34).

Reifying the critical role that faculty development plays, Rothstein (2004) pointed out if institutions cannot become conduits to faculty growth and knowledge production, they should not take up the task of teaching physical therapy to students. He emphasized the importance of Boyer's (1990) model of scholarship involving "four separate yet overlapping functions for faculty i.e.,

scholarship of discovery, integration, application and teaching" (p. 494). The scholarship of discovery relates to finding out, knowing or revising theories, principles, knowledge, or creations. Boyer explains that academic discovery requires, "the commitment to knowledge for its own sake, to freedom of inquiry and to following, in a disciplined fashion, an investigation wherever it may lead" (p. 17). Integration involves "making connections across the disciplines, placing the specialties in larger context, illuminating data in a revealing way, often educating nonspecialists, too" (p. 18) and, fitting one's research or others' into larger intellectual contexts. Boyer claims that application refers to using knowledge to address societal issues and applying it responsibly. The fourth function, teaching, can be classified as scholarly teaching (teaching informed by the literature) and the scholarship of teaching and learning (adding to the literature). Using the latter context, teaching necessitates deepening, transforming and extending knowledge, and encouraging students "to be critical, creative thinkers, with the capacity to go on learning...." (p.24).

Kaufman (2009) claims her study to be the first one to analyze factors contributing to the "scholarly activity of individual physical therapist faculty members." She continues by discussing, "how individual, career, institutional, and work factors explain variability in peer-reviewed publications, peer reviewed presentations, and peer reviewed grant awards of individual physical therapist academicians" (p. 206). Her findings revealed, that "about 18% of the physical therapist faculty participants were non-publishers, and 12.5% had published more than 20 peer-reviewed articles" (p. 210). She found a similarity between physical therapist faculty and higher education faculty in terms of publications relating to peer-reviewed articles.

Lowenstein (2009) points towards policies that encourage inclusion of multicultural educations in programs preparing educators. Despite policies reflecting standards for the national accreditation and guidelines of professional associations, which were lauded by many such as Banks (1995), and Cochran et al (2004), almost half the institutions have not paid any heed to including service minded professions like physical therapy, since adherence to these policies is not mandatory.

Schreiber et al. (2009) stated that while continuing education for professional development differed generally, there are no specific requirements mandated by most states. The participants of their study suggested, "such a requirement is necessary to ensure all physical therapists are actively participating in ongoing professional development. In addition, several participants referred to the importance of continuing education conferences being interactive, clinically relevant, and evidence based to enroll in such a seminar" (p. 928).

Over the last two decades, there has been an increasing awareness that faculty development for physical therapy college instructors is vital. In a recent survey of 173 physical therapy program administrators of which 94 (54%) responded; 85% reported that they had some formal faculty development plans in place but only 35% reported that the faculty participation was mandatory (Priest, 2001). Since the mid-1990s there has been a steady increase in formal faculty development programs. In an effort to support that mission, the researchers in this study asked how a process dedicated to enhancing faculty's instructional skills would impact their thinking about instruction. The research question that framed this study was: How would faculty development impact PT faculty's understanding and use of new instructional skills?

## Methods

### Participants

Physical therapy faculty members from a large research-extensive university located in the Southeast had requested a teaching seminar from their department chair. The chair agreed to fund the initiative. Subsequently, via email, all departmental faculty were invited to participate. Eight (seven females and one male), both tenure and non-tenure accruing faculty: a research assistant professor, four associate/assistant clinical professors, a clinical instructor, one adjunct faculty, and a pre-doctoral fellow were the participants. Their length of service ranged from one year to 30 years. Three of the participants were from Pediatrics,

two from Orthopedics/Sports, and one each from Cardiovascular and Pulmonary, Neurologic Rehabilitation, and Musculoskeletal Practice. Signed letters of informed consent were obtained during the first meeting of the seminar and the study was approved by the university's office of institutional research.

### The Teaching Seminar

The participants met two hours per week to complete a six-week seminar on teaching. Although attendance was voluntary all of the participants attended the seminar on a regular basis. A distinguished teaching scholar and professor from the university's College of Education with extensive research in clinical and classroom learning environments and faculty development initiatives taught the seminar.

The overall purposes of the seminar were to impart participants with specific skills, knowledge, and strategies. Learning experiences were developed to have participants a) document and compare entry and exit instructional practice beliefs; b) identify how they assessed student learning; c) write assessments aligned with desired student outcomes; d) design learning experiences that would promote critical thinking skills (CT); and e) demonstrate alternate ways of presenting content. The topics of the seminar included: the role of curriculum to teaching; the relationship between curriculum and instruction; strategies for writing curriculum and assessment; instructional strategies that promote critical thinking skills; teaching that responds to various learning styles; and using models of teaching to achieve desired outcomes. As a follow-up to each session, the seminar director asked participants to respond to specific prompts in a learning journal. See Table 1.

**Table 1. Prompts for Learning Journals**

<b>Session #</b>	<b>Prompts</b>
1	<ul style="list-style-type: none"> <li>Describe how you believe you teach.</li> <li>Identify the type of learning experiences you provide.</li> <li>Describe the kind of assessments you use.</li> </ul>
2	<ul style="list-style-type: none"> <li>Write a two- to three-page reflective paper that describes the relationship between how you teach and how you learn.</li> <li>Describe how you will use your knowledge of learning styles during instruction.</li> </ul>
3	<ul style="list-style-type: none"> <li>Describe how you will take ordinary teaching experiences and change them to a critical thinking skills learning experiences.</li> <li>Write a two- to three-page reflective paper explaining how to promote critical thinking skills during instruction or what you will do to promote critical thinking skills.</li> </ul>
4	<ul style="list-style-type: none"> <li>Write a two- to three-page reflective paper describing the type of assessments that you use.</li> <li>Identify one new assessment strategy that you will try this semester.</li> <li>Characterize the alignment among your course objectives, learning experiences, and assessments.</li> </ul>

### Research Framework

The faculty participants were asked to record their responses in reflective journals. The journals provided insight into their frame of reference and allowed the researchers to derive meanings from the participants' written words, beliefs and behaviors. Reflective journals also provide a constant reference and recourse to participants' thoughts and reflections, and form a way of triangulation, lending itself for member checking (Creswell & Miller, 2000; Merriam, 1998). The journals enhanced analytical thinking; highlighted learning outcomes, participants' reactions, understandings, and appreciations; and permitted researchers the opportunity to study the impact of learning events and

possible future action plans. Researchers have pointed out that participants can make good use of these reflective journals by revisiting and returning to the experience, gauging personal growth and development over time. The reflective journals lent themselves to an “inquiry audit” (Lincoln & Guba, 1985 p. 317) and to increasing the dependability of the research. The second and third authors used the constant comparison method while reading the journals to compare their contents to the objectives and the end product of the seminar for course alignment and consistency.

### Data Analysis

As described by Rodwell (1998), this study used a constructivist approach to analyze data that included basic unitizing, coding, and categorizing. Specific phenomena emerging from the journals was identified and coded into content-based codes and categories, which were subsequently grouped into various themes. Data analysis was conducted in phases. In the first phase, the reflective journals were read, then coded independently by the second and third authors. Next, they compared their codes in order to reach agreement on the common themes. After achieving consensus, the codes and respective themes were placed on NVivo (a qualitative coding software program), resulting in 23 tree nodes and 966 references. The first author then met with the second and third authors to discuss how to revise, refine, add, drop or collapse some of the codes and themes (Lee, 2005). In case of code or category discrepancies the authors discussed the issues and reached a mutual agreement. This two-step process added to the triangulation of data. In certain cases some codes were merged into one category, while in other cases new categories were created. Some of the codes and categories were deleted in total, since they did not seem to relate to the objectives of the research. Consensus was achieved to keep eight tree nodes and 846 references. The themes included: Assessment, Awareness of Teaching Style, Challenges to Teaching, Critical Thinking Skills Strategies, Expectations, Instructional Strategies, Planned Changes, and Teaching Style. After agreeing on the tree nodes or main themes, conceptual definitions were developed as shown in Table 2. Participants’ responses to an evaluation of the teaching seminar also served as a source of data.

### Results

The results that follow depict exemplars of each of the themes through participants’ references n = 846 (See Tables 3 and 4). Figure 1 illustrates the impact of the faculty development process on the participants.

### Awareness of Teaching Style

Throughout the seminar, faculty became more aware of their own learning styles. This helped them see how recognizing students’ learning styles necessitated adapting their teaching styles. Angela shared that, “This exercise we did to reveal our learning styles is helpful in many ways... This will be a challenge for me.” She also reported her intention to “... think more about the variety of learning styles of the students in my class and attempt to provide some experiences that fit with all styles... this exercise has at least made me aware of the possibility that there are students in my class who are completely at odds with my learning style and teaching style.” Hugo realized he, “could do a better job of planning thought provoking questions for discussion but I have developed a preference for topical themes.” Similarly, Rachel and Sally found that they needed to present information using multiple methods. Martha discovered that she had a hard time giving up control of the flow of classroom time. Jessica became more aware of the different ways in which students perceived and processed information, while Sally inferred that poor performance or disinterest perhaps was really “an incompatibility between instruction and learning.” Danielle believed that she did a good job of combining styles of learning in teaching her courses and was, “...now gaining

**Table 2. Conceptual Definitions of Themes**

Themes	Definitions
Assessment	Methods of evaluating learning outcomes
Awareness of Teaching Style	Beliefs about providing instruction
Challenges to Teaching	Impediments to providing instruction
Critical Thinking Skills Strategies	Instructional methods used to promote critical thinking skills
Expectations	Beliefs about student responsibilities for learning
Instructional Strategies	Methods to promote learning
Planned Changes	Future goals for making changes to planning, teaching, and evaluating
Teaching Style	Conceptualization and organization of teaching methods

**Table 3. Themes by Frequency of References by Sources (# of participants)**

Themes	Frequency of References (n = 846)	Sources
Assessment	138 (16.3%)	8
Awareness of Teaching Style	38 (4.5%)	8
Challenges to Teaching	44 (5.2%)	7
Critical Thinking Skills Strategy	68 (8.0%)	7
Expectations	32 (3.8%)	6
Instructional Strategies	212 (25.1%)	8
Planned Changes	189 (22.3%)	8
Teaching Style	125 (14.8%)	8

an understanding of the value of this approach. I think I have just stumbled onto my teaching techniques without really knowing what was happening...I am enthusiastic about implementing new ideas...."

### Teaching Style

Sally explained that her teaching style was "... unimaginative and predictable ... nearly all of my delivery is content-driven lecture, free from any humorous anecdotes or personal thoughts [and] contain almost no alternative learning experiences." Martha confessed that, "my class sessions are very structured. I have everything planned out to the minute and am uncomfortable if the activities planned for a day do not add up to ... whatever the time allotment may be. In planning a class session I often don't provide time for discussion or exploration of ideas."

During instruction, Hugo directed "the flow of information [considering]... myself to be very good at reducing complicated theory into line items [and] to what are the principles of action." Angela described her teaching as "organized" and that she was "always willing to meet with students who ask for extra help." Rachel characterized her "teaching style as informal and friendly." She hoped that the students would see her as non-threatening and perceive that the material was fun to learn by using a variety of strategies.

### Challenges to Teaching

Several participants described the difficulties they faced in teaching. For some, the amount of preparation time was onerous and seemed endless. Rachel had a hard time deciding which was the most salient information to present.

The prep time is exhausting. I spend many additional hours in the planning stage. I make an outline and then modify it and then change it and then modify that. It is grueling and frustrating. I need help in that category.

Martha reported working on each session up until the beginning of class time. "I never feel prepared; never feel ready; never feel that I know enough. I probably spend way too much time in teaching preparation and as a result other areas necessary for my professional development suffer."

**Table 4. Themes by Participants**

Themes	Angela	Chloe	Danielle	Hugo	Jessica	Rachel	Sally	Martha
Assessment	22	15	16	17	20	11	20	17
Awareness of Teaching Style	3	4	2	4	9	10	5	1
Challenges to Teaching	0	4	6	7	5	9	5	8
Critical Thinking Skills Strategy	14	11	5	8	12	0	2	16
Expectations	3	0	4	1	4	16	4	0
Instructional Strategies	29	31	35	23	23	25	10	36
Planned Changes	47	24	19	6	3	61	23	6
Teaching Style	8	15	19	10	8	26	10	29

For others a desire to deliver all of the facts, and an overriding feeling that they could never be adequately prepared, rendered teaching an activity that they preferred to avoid. Sally wanted to become less consumed with how she could fill every minute of the lecture, and "... more concerned about how the facts fit into the atmosphere of student learning."

A lack of pedagogical training or motivation affected some of the participants. Rachel explained how a lack of teaching affected her perspective on teaching.

I would like to go into the classroom with a plan but be proficient enough that I could be flexible and allow the class to take its own direction with me as the guide, I would like to be as creative in the classroom as I am in patient treatment where the patient sets the tone, directs the focus and I guide them to achieve their goal with motivation for performance and they meet with success at each session.

Angela discussed her difficulty aligning assessments with course objectives. Although she felt certain that students' learning experiences were aligned with course objectives, "... assessments, in many cases, have not been aligned for higher order objectives, particularly those that involve analysis and evaluation." Sally stated that, "Teaching is definitely work for me. It does not come naturally. ... I never received any training on how to teach, my method of instruction reflects the mode that was modeled to me, throughout my student experiences."

### Expectations

Most of the participants held specific ideas about what students should accomplish during class preparation. For example, Angela stated that she expected students to come to class prepared. Danielle wanted her students to read the dissection manual before coming to lab. Rachel felt that students should be responsible for all of the readings whether or not it was covered explicitly. Overall, these instructors emphasized that students should read the course materials beforehand.

### Assessment

References to assessment accounted for 16.3% of the data. Most of the faculty reported that they tended to use quizzes or exams including the multiple-choice question format. Sally mentioned using "... exclusively bubble-based didactic examinations to assess student performance" as well as quizzes that were

“unannounced and based upon discussed content/key highlights of the previous class.” Rachel, Angela, and Hugo indicated that they use a similar formative and summative format.

Some faculty were dissatisfied with the multiple-choice format. Sally stated that she did, “... not prefer to grade performance in this manner.” Similarly, Angela confessed her recognition that this format was not ideal, “... writing the questions so that the distracters are plausible is quite difficult.” Sally concurred, “It is difficult to develop questions that can be asked [and] still reflect the targeted learning concept.” Others justified the use of multiple-choice questions that assessed cognitive skills of low complexity. Sally commented, “I tend to stick with multiple-choice clinically-derived questions, because this is how the students will be graded for the Board Examination.” Angela explained that, “I know that is not an excellent idea, but with 55 students, it is difficult to do too many essay questions.” Martha showed her dislike for these question types stating that she was more interested in the students being able to problem solve their way through the cases. Apart from the objective-based testing, faculty members described their use of other assessments. Sally used “project assignments (one clinical, one presentation) [that] assessed higher [order thinking cognitive skills] on Bloom’s taxonomy.” Rachel used “slide or video viewing followed by a series of questions and a hands-on lab practical.” Students formed small groups and engaged in problem solving. This format provided, “... a non-threatening environment; it is a pass/pass situation.” Hugo used “a psychomotor practical examination and a short answer/short essay based on a videotape.”

Martha reported a preference for the “take-home, case-based format” that consisted of a medical, social, familial, environmental history of two to three patients.” Danielle indicated a use of, “written exams includ[ing] both basic anatomy and the functional biomechanical aspects of movements.” Chloe relied on class participation, group discussions, and reflective journaling. She believed that with journaling, “... students seemed to grasp the information and relate it to other issues and classes.” Angela mentioned using “... practical exams where the students are given a patient problem ... decide what to do for the patient and then perform the skill.”

Team teaching induced another set of challenges related to writing assessments. Martha showed her dismay and confessed that, “I am unsure of the alignment between the course objectives and the assessments. The faculty member responsible for the entire semester-long course writes the objectives and I do not closely look at those as I develop the assessments.”

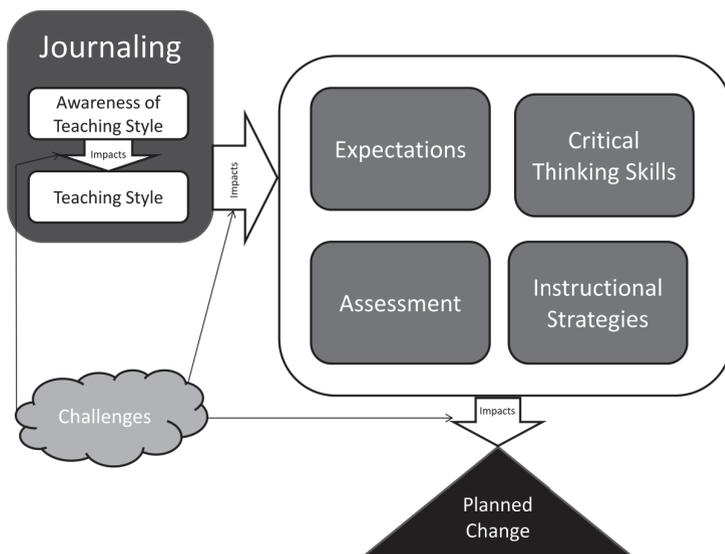
Some faculty members showed their inclination to try out new assessment techniques. Sally looked forward “to expanding [assessment strategies] ... with online or practical assessments.” Hugo expressed his desire to return to the use of longer essay questions.

## Critical Thinking Skills Strategies

To foster students’ abilities to use critical thinking skills, Martha posed guided questions to help them “... make the connection between the ‘words’ presented and what they actually saw the patient [saying or doing].” She would, “demonstrate a handling technique and have them practice it under ideal conditions.” Once she felt they had mastered it, she asked them to hypothesize using the same technique with other patients such as, what if this patient were blind or weighed 300 pounds? Posing alternate scenarios prompted students to think on their feet and make inferences.

Jessica modeled critical thinking by talking through “potential advantages and disadvantages and whether or not I would use that approach regarding new interventions or evaluation methods students have seen in the clinic.” She also facilitated critical thinking while teaching about different pathologies and associated signs and symptoms. She pointed out that she could “ask students if they have ideas for the precautions or contraindications for treatment [to make] them think about anatomy, biomechanics and physiology ...”

Hugo used open-ended problems that required students to work cooperatively as they performed diagnostic techniques. For example, he “... would expect them to think through [the following scenario]. Your patient has degenerative changes in the hip on which you wish to perform



**Figure 1. Impacts of Faculty Development on Participants’ (n =8) Instructional Practice Beliefs**

the Obers test. How might this affect your 1) performance of the test and 2) interpretation of the results.” He felt that this type of exercise was valuable because it allowed students to debate “... in a ‘safe’ environment [and] ... practice best ways to disagree with each other before ...” they started to work in clinics. Angela used small groups to analyze a patient’s gait with and without orthosis and expected students to determine “... gait deviations, and compensations that they see, discuss what possible problems could cause those, and provide rationale for their answers.” Throughout her course, Danielle strengthened her students’ ability to treat any patient population soundly and safely by expecting them to justify and describe a rationale.

## Instructional Strategies

Participants used a range of strategies to engage students including kinesthetic, didactic, inquiry-based, grouping students, guided practice, and student-led presentation. Rachel provided a hands-on training where much of her instruction was kinesthetic. For example, “students had the opportunity to observe a treatment demonstration of a child who presented clinically ...” with a particular diagnosis that students had read about. This exercise was followed by lab practicals where they tried the techniques with their peers.

Jessica modeled and reinforced the use of the templates (e.g., patient evaluation process, and phases of rehabilitation) by conducting guided evaluations with patients. She asked leading questions such as, what else could we ask the patient about his pain? and have we covered all the important topics in her medical history? She described her teaching as “very concrete” and would “ask the students questions in class and on assignments that prompt[ed] them to process information reflectively.”

Martha placed students in small groups and “distributed video cases on CD.” After they watched the video, she asked them a series of questions and had them to share their comments and observations aloud with their peers. Angela utilized lecture and laboratory exercises including patient cases such as videotaped patients or bringing patients into the classroom, and “... student presentations, [or] think out loud exercises.” In Danielle’s course, students “explored bones after going over the osteology and dissecting a particular region of the body.” Each student was also assigned a special dissection that they completed and then taught to the rest of class.

## Planned Changes

Sally wanted “to enhance her approach to teaching from ‘spoon-feeding’ to having students take greater accountability for the learning.” She hoped to use her new knowledge to address students with different styles of learning. Rachel wanted to implement a variety of methods

including auditory, visual and tactile experiences. She also desired to become aware of “... ‘teachable moments’, which are, in my opinion, the most meaningful experiences in learning.” Jessica planned to present “written expectations for competencies in her classes because in the past, I have just given a verbal expectation and some classes have come well-prepared, while others have not.” Hugo hoped to do planning for courses in advance of teaching. “I think the biggest change that I need to make is in the planning ... in advance, not morning of.” For example, he pointed out the necessity of ensuring that course objectives were appropriate and whether tested material was actually taught.

Danielle hoped to make students more responsible for materials, to develop criteria for practical movement activities and make certain that objectives were aligned with assessment. Chloe wanted to “make sure to discuss my style and how I am going to teach during the first class.” Martha proposed, “... to develop assignments that encouraged students to explore and share their opinions/insights on a matter....” Angela intended to add quizzes to encourage reading materials prior to class “and to use class time for discussion.” She also proposed to “...add some different forms of assessment (discussion type questions including short essay questions) to test at the three higher domains – analysis, synthesis, and evaluation.”

## Evaluation of the Teaching Seminar

Using an adapted seminar evaluation tool (Behar-Horenstein, Childs & Graff, 2008) the participant feedback corroborated much of what they shared in their learning journals as shown in Table 5. Of the 19 Likert-type items where 5= strongly agree, and 1 = strongly disagree, six items reified some of the findings:

- I believe that knowing how I prefer to learn influences how I teach (4.53).
- As result of taking this course, I now believe that using only multiple-choice tests is insufficient (4.54).
- This course helped me have a better understanding of how to promote students’ critical thinking skills when I teach (4.69).
- The course has helped me have a better understanding of the ways in which I teach (4.77).
- From taking this course, I now have a better understanding of types of assessments that I can use (4.54).
- Taking this course has helped me understand that there are a variety of modalities that I can use other than lecture (4.85).

Participants also wrote comments that were intended as instructor feedback. Overall the comments pertained to the value of the course experiences. For example, one individual wrote that the “... journal entries made me think about and apply information,” while another stated that the course provided, “Great learning opportunity and ability to see our strengths and areas of improvement.” Two others

suggested that the course experiences would enable them to improve teaching. One individual wrote that s/he was, “Much better prepared for teaching and ongoing learning” and another stated, “I will take a lot of these suggestions and apply them to when I have students in the clinic.”

## Discussion

Most participants conceptualized their teaching as didactic, supplemented by a practical application of related skills. As they became more aware of their own learning styles, they began to compare the similarities and differences between their preferences for learning and that of their students. Perhaps this faculty development initiative helped them integrate into the issues around teaching rather quickly. Clearly, their awareness crystallized thinking about how they could adapt their teaching to respond to students’ learning needs. They wrestled with challenges -- perhaps inherent among instructors who lack formal training: feeling challenged by the preparation time required before teaching, trying to disseminate engaging information, and determining how to align assessments with course objectives.

Participants also acknowledged their tension of wanting to test higher-order thinking skills but felt constrained by the national board test methods or the challenge of writing quality item distractors and the time involved. Writing well-constructed test items is a common concern among developers of multiple-choice tests. However, a more salient issue is the capacity to write potential answer options, item alternatives that differ in their relative correctness. Causing students “to make subtle distinctions among answer options, several of which may be somewhat correct” (Popham, 1995, p. 105) is considered to be one of the strengths of multiple-choice questions. However, when such assessments only require students to generate the correct answer, they only use recognition, a low-level cognitive skill. Writing good multiple choice questions, including items that could evaluate higher level learning objectives such as analysis, synthesis, and evaluation, is difficult according to Svinivki and McKeachie (2011). They suggest that unless the test will be taken by hundreds of students, it is unwise to invest the time needed to write items that are reasonably fair, accurate, and inclusive. These authors emphasize that stems should be stated clearly enough to be understood without reading the alternatives. Remarkably, and despite a lack of formal training in teaching, many participants had a keen sense of the ways in which instruction and learning experiences could foster students’ critical thinking skills. They also discussed salient strategies for promoting critical thinking skills such as weighing alternatives, thinking aloud, defining treatment options, and hypothesizing about the

benefits and disadvantages of treatment decisions. Despite conceptualizing teaching as merely a one-way action of transmitting information to students, the majority of participants reported using a wide variety and an impressive set of instructional strategies. Notwithstanding, all of the participants held a belief that students were responsible for their learning.

They had clearly defined planned changes related to their nascent awareness of students’ learning needs ranging from, writing course objectives to using varied learning experiences and different forms of assessment, to holding students accountable for owning and sharing their learning. They characterized their teaching styles along a continuum that showcased instructor flexibility or lack thereof, from extremely structured and unimaginative to open and approachable.

The findings showed that this seminar allowed the participants, most who were clinicians, to come together, discuss and reflect upon matters pertaining to their teaching

**Table 5. Participant Evaluation for Course Design and Teaching Strategies for Physical Therapy Faculty**

1. I believe that knowing how I prefer to learn influences how I teach.	4.53
2. I understood what learning styles were before this course.	3.00
3. I would recommend this course to other new faculty in my department.	5.00
4. Taking this course has increased my confidence as an instructor.	4.31
5. I learned about learning styles for the first time in this course.	2.82
6. As a result of this course, I now know the difference between goals and objectives.	4.00
7. As result of taking this course, I now believe that using only multiple choice tests is insufficient.	4.54
8. This course helped me have a better understanding of how to promote students’ critical thinking skills when I teach.	4.69
9. As a result of taking this course, I feel more confident about how I will teach.	4.46
10. The topics in this course were important to me.	4.69
11. I have learned a lot in this course.	4.69
12. From taking this course, I now have a better understanding of types of assessments that I can use.	4.54
13. The instructor provided adequate feedback.	5.00
14. This course has helped me have a better understanding of the ways in which I teach.	4.77
15. This course has given me guidance in how to work with challenging students.	3.85
16. The instructor answered my questions.	4.92
17. Knowing how I learn has been helpful to me.	4.58
18. Taking this course has helped me understand that there are a variety of modalities that I can use other than lecture.	4.85
19. The length of time for each session was sufficient.	4.85

practice. As Gottlieb, Rogers and Rainey (2002) point out, clinical instructors may be quite skillful in the profession but often lack formal teacher training. While some faculty who have little to no experience can be expected to figure out how to teach on their own, others prefer to learn alongside their colleagues (Starcke, 2005). Creating a collegial community of learners supports risk-taking, reflection, sharing victories, and encourages growth (Behar-Horenstein, Childs, & Graff, 2009, 2010). As findings from this study pointed out, the participants benefited from discussions, questioning their assumptions, correcting misconceptions, and exploring their beliefs. As they acquired new information about teaching, learning and assessment, they challenged their own ways of doing these activities and began to think of alternate ways to teach more responsively. The collegiality that was witnessed during this seminar may have been essential in helping the participants formulate their identity as instructors. Overall the findings emphasize the essential role of faculty development for individuals and institutions so that they can become conduits to instructor growth and knowledge production (Rothstein 2004). However, despite these findings, asking faculty to merely cite their opinions and beliefs is not enough to produce changes in their teaching. Self-reported data—especially in terms of what is understood and used—needs to be verified over the longer term and triangulated (possibly, through observation). The effectiveness of this faculty development effort, as demonstrated by the physical therapy faculty in this study was moved along quickly in part, by a skilled presenter. However, the findings suggest that many faculty can make rapid teaching improvement progress with such programs and that this type of initiative can integrate faculty into the issues around teaching rather quickly.

The prompts presented in this study might be used to review one's own teaching effectiveness and for faculty to validate their own beliefs around teaching improvement. This article might be useful to other faculty developers so that they can examine faculty development methods that may be useful in other faculty development programs. Other implications of this study are described in the following questions.

1. How might the teaching seminar format be incorporated into regular practice?
2. How might the formulation of the teaching seminar operate in other clinical/non-clinical contexts?
3. How does PT professional learning operate in other countries and how could this knowledge be used there?
4. What are the costs of continuing to not embed PT professional learning into PT education?
5. How can these costs be measured against the opportunity costs of developing suitable curriculum content and viable assessment tasks/criteria?

Teaching cannot be left to happenstance in disciplines where classroom instruction will be translated into patient care (Behar-Horenstein, Childs, & Graff, 2008). Professional schools must recognize the essential relationship between teaching and social progress more clearly because what we teach future health care providers impacts understanding, communication, and patient care. If resources are invested to ensure quality teaching, they are likely to ensure positive student outcomes, increased understanding and facilitate communication. Faculty development is recursive, it not only influences faculty and those they teach, but those they care for as well.

## Conclusion

When time and an investment are made in faculty development, the benefits to professors can be manifold. On one hand, teaching expertise is improved, while faculty also become more knowledgeable and willing to vary their instructional strategies. Creating a space for faculty to get together and discuss issues related to thinking about teaching can be powerful. Group synergy develops whereby participants collaborate by assisting each other in their growth and development as purveyors of knowledge. In this study, the discovery of one's own limitations and strengths were catalysts for others development. This process fomented curiosity about ways to dig more deeply into thinking about teaching, and in considering some of the instructional ways that would engage all students actively and purposely. Talking about anxieties related to teaching and assessment also facilitated participants' sense of safety, trust and risk-taking. The opportunities presented during the teaching seminar led to the emergence of a professional learning community among the participants. Although it occurred during a short span of time, previous research has shown that this type of experience can lead to sustained and observable changes (Behar-Horenstein, Childs, & Graff, 2009, 2010).

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