Educational Factors Influencing Physical Therapist Students' Approaches to Learning

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Research Report

Educational Factors Influencing Physical Therapist Students’ Approaches to Learning

Debra Ough Sellheim, PT, PhD

Background and Purpose. Students approach learning in different ways that influence the amount and quality of their learning. These approaches include a surface approach characterized by memorization, a deep approach characterized by seeking understanding, and a strategic approach characterized by doing whatever is necessary to achieve high grades. Although often overlooked, students’ approaches to learning are influenced by many contextual and educational factors. The purpose of this study was to examine physical therapist students’ perceptions of learning experiences and how they influence the students’ approach to learning. National trends in physical therapist students’ approaches to learning were also examined.

Subjects. Twenty-four physical therapist students (13 female, 11 male) from 3 midwestern physical therapist education programs (2 public, 1 private) participated in the qualitative component of this study. Seven hundred sixteen students participated in the national survey component, with a return rate of 45.7%.

Methods. Qualitative data were gathered using audiotaped semistructured interviews of participants. In addition, a survey utilizing the Adelaide Diagnostic Learning Inventory for Medical Students, Version 2. (ADAMS 2) was used to profile students’ preferred approaches to learning nationally. Using a process of content analysis, dominant categories and patterns were identified, coded, and categorized throughout the data. Interview data were independently read and coded by a second peer examiner. Descriptive statistical analysis of the survey data was performed.

Results. The qualitative and survey data indicated that physical therapist students showed preferences for deep or strategic approaches to learning. Factors that appear to move students toward a surface approach in their learning include inability to see relevance in the material, assessment methods focused on recall of information, overload of curriculum content, passive teaching methods, and environments that are not conducive to learning. Factors that appear to move students toward a deep approach to learning include awareness of the relevance and context of learning, appropriate sequencing of learning, assessment methods focused on reflective observation and clinical reasoning, adequate time to utilize deep approaches to learning, interactive learning, connections between new learning and previous knowledge, and discussion with classmates.

Discussion and Conclusion. Students’ perceptions of learning experiences affect how they approach their learning. Faculty must develop and implement instructional methods and curricula that facilitate a deep approach to learning and avoid approaches that encourage students to overcome surface learning processes.

Key Words: Approaches to learning, Constructivist learning theory, Deep learning, Physical therapist education, Surface learning.

INTRODUCTION

Today’s rapidly changing health care delivery system demands that physical therapist students graduate not only with technical abilities but also with a sophisticated skill set allowing them to function effectively in a fast-paced, technological, rapidly changing environment; that is, employers expect new graduates who are able to “hit the ground running.” This demand for a higher-level outcome has placed increasing pressures on physical therapist education programs to improve the quality of student learning and facilitate the development of these high-level skill sets in their graduates. Student outcomes articulated by most physical therapist education programs include high-level skills such as critical thinking, problem solving, and lifelong learning. Unfortunately, however, many physical therapy faculty are experts in their content areas, but novices in pedagogical matters. Few physical therapy faculty have been exposed to the substantial body of theory and knowledge that exists in education and, like faculty in many disciplines, are not familiar with what constitutes effective educational experience.1,2

Studies of factors influencing the quality of student learning have shown that students with majors other than physical therapy approach learning in different ways and that their approach directly affects the quality and quantity of their learning.5,6 It is important to distinguish between a student’s general learning style and the specific approach a student uses at any particular moment in response to a learning activity. A learning “style” is defined as a predisposition on the part of some students to adopt a particular learning strategy regardless of the specific demands of the learning task. A learning “approach” (strategy) is a pattern of information-processing activities used in specific situations to prepare for an anticipated test of knowledge and skills (i.e., the way a student chooses to tackle a specific learning task in light of its perceived contextual demands).7 Marton and Säljö1,2 completed some of the seminal work in this area distinguishing between “deep” and “surface” approaches to students’ reading of an academic text on which they had been told to be prepared to answer some questions. The surface approach was characterized by the students’ intention to simply spot and memorize the facts and ideas likely to be used in questions, viewing the learning task in isolation from both the academic subject as a whole and from real life. The deep approach, in contrast, involved an active attempt by the student to seek out the author’s meaning, to integrate components, and to relate new ideas from the text to his or her previous
knowledge and personal experiences. The results of Marton and Säljö's research also establish a relationship between students' approach to learning and their subsequent levels of understanding. Students with a deep approach had a more complete understanding, and were also able to remember more factual details, both immediately and several weeks later.

During the same period of time, other researchers also independently studying approaches to learning. Using self-report inventories, Briggs along with Ramsden and Entwistle identified similar approaches to learning (i.e., superficial and deep) in student populations. In addition, they identified a third approach to learning that was the strategic or achieving approach. Students with a strategic approach to learning tend to use either deep or surface learning processes depending on what they believe will produce the most successful result. Each of these main approaches—surface, deep, or strategic—can be categorized by identifying the predominant factors that motivate students, the primary intention of students, and the learning process used in carrying out these intentions. This learning process is important because it appears to relate directly to the quality of the learning outcome.

Students adopting the deep approach are predominately motivated by an interest in the subject material, recognition of its vocational relevance, or both. The student's intention when studying is to understand the subject's meaning. This deep-level process is manifest by relating the task to previous knowledge and personal experience, by making active attempts to relate the different parts of a task to each other or to other tasks, and by imposing a structure on the whole task and thinking about its meaning.12.13

Students adopting the surface approach are predominately motivated by either a desire simply to complete the course or a fear of failure. Their intention is to fulfill the course requirements by memorizing and reproducing the material they believe is likely to come up in the assessments. Students using this learning process focus on specific comparisons or parts of the text in sequence, rather than on the more important parts. They also memorize details and direct information, indicating a lack of orientation toward the message as a whole.12

Students adopting the strategic approach are much more influenced by the context rather than by the nature of the task itself. They are predominately motivated by the achievement of high grades and a sense of competition. To be successful, they elect to use a surface or a deep approach, depending on what they believe would produce the most successful results. Even though these students show a great deal of versatility in their strategies, their goal is not to ensure understanding, but to achieve high marks. The level of understanding achieved by students using strategic processes is incomplete and varies depending on course requirements and assessment methods.7

A deep approach to learning is consistent with constructivist learning theory, which is based on the fundamental assumption that students create knowledge from the interaction between their existing knowledge or beliefs and the new ideas or experiences they encounter.11 As with a deep approach to learning, a distinguishing goal of constructivism is an emphasis on the process of understanding or meaning making.15-17 Constructivism and a deep approach to learning contrast with more traditional learning theories that are based on the belief that students acquire new knowledge through passive processes of transmission and rote/surface learning where knowledge is passed unchanged from teacher to student.

Numerous factors influence how students approach learning, including curricular organization, teaching and assessment methods, and the quality of relationships with teachers.10 Students' perceptions of their educational experiences,15-17 Ramsden stated that "an approach to learning is a description of a relation between a learner and a learning task—the description of an intention and an action."15,17,30 He argued that students react to the learning situations they perceive, not always the ones that the teacher plans and defines. Other authors also support a contextual view, noting that aspects of the learning environment are known to influence which approaches to learning students adopt; this, in turn, will influence the quality of learning outcomes. These authors point out that while students experience the same learning environment, they perceive it in different ways. The direct influence on the approach to learning comes from the subjective perception, rather than the objectively described environment. A relational view involving inquiry into and reflection on how students learn specific subject matter in particular contexts must be taken to improve the teaching-learning process.

Only a few studies focusing on physical therapist students' approaches to learning have been conducted. Van Langenbergh investigated approaches to studying used by 187 first- and second-year physical therapist students in a problem-based curriculum. Results suggested that the physical therapist students possessed desirable studying approaches when their scores were compared with normative scores on the Short Inventory of Approaches to Studying. These study approaches included an ability to define and organize their own studying tasks, high motivation to achieve, less reliance on memorization, and the ability to vary and adapt their study approach to the learning task. Graham investigated learning processes used by 10 first-year physical therapist students in developing conceptual knowledge in physical therapy. Results indicated that the use of discussion, visualization, and past and current experience were key learning strategies in the process of developing conceptual knowledge in kinesiology. Titchen and Golems, in a longitudinal comparative study of physical therapist students in subject-centered and problem-based curricula, theorized that approach to study was related to context. Results demonstrated that the approach to study was more favorable (i.e., deep processes) when student learning was conceptualized by concrete experiences such as real-life case studies or contact with patients.

### PURPOSE

Study of the relationship between context and student learning raises critical questions that have not yet been fully addressed in the literature on physical therapist education. It is a logistical assumption that the quality and quantity of student learning are directly influenced by the context and practice of physical therapist education. The purposes of this study were to examine whether physical therapist students have a preferred approach to learning and to examine how students' perceptions of learning experiences influence their approach to learning.

This study was part of a larger project based on a conceptual framework, outlined in the Figure, derived from a review of the literature and a model of the teaching-learning process developed by Neeble and Entwistle. This model focuses on the relationship between context and learning and their ultimate influence on the other components of the teaching-learning model. Students' learning experience perceptions and their influence on approach to learning (and subsequently learning processes and learning outcome) are key to this model.

### METHODS

#### Research Design

This study utilized qualitative and quantitative data collection techniques. A phenomenologic qualitative approach, using interviews, examined
how students' perceptions of learning experiences influence their approach to learning. The intent of phenomenologic study is to try to understand human activity from the viewpoint of the person being studied. It is largely an investigative process in which the researcher's main task is to explicate the ways people in particular settings come to understand, account for, take action, and otherwise manage their day-to-day situations. This study also used a survey instrument to profile students' preferred approach to learning. The survey data were used to seek convergence of results, inform the dominant qualitative methodology, and add scope and breadth to the study.

Participants

The interview component of this study was conducted on the campuses of 1 private and 2 public institutions of higher education in the Midwest that have professional (entry-level) postbaccalaureate degree physical therapist education programs. Enrollments ranged from 30 to 47 physical therapist students in each year of the program. Eight students from each of the 3 cooperating physical therapist schools (N = 24) were randomly selected for face-to-face interviews from lists of volunteers recruited through classroom visits. Table 1 summarizes the demographic characteristics of this student sample. Undergraduate majors of the students included health science/wellness (29%), biology/biochemistry (17%), exercise science/athletic training (13%), psychology/economics (8%), and journalism/communications (8%). The remaining 25% of the students did undergraduate work in prephysical therapy as part of a 2+3 program.

For the survey component of this study, program directors from 16 randomly selected, postbaccalaureate, accredited, entry-level physical therapist education programs across the continental United States were asked to distribute a survey instrument to currently enrolled on-campus physical therapist students. Survey questionnaires also were distributed to students in the 3 participating programs described above. Names and addresses for the sample were obtained through the current list of directors for postbaccalaureate programs accredited by the Commission on Accreditation in Physical Therapy Education (CAPTE), from the American Physical Therapy Association (APTA) Web site, or by contacting the schools via telephone. Survey questionnaires were mailed to the study participants along with a letter that explained the nature of the study and assured participants of the anonymity and confidentiality of their responses.

Data Collection Instruments and Procedures

Survey data. The Adelaide Diagnostic Learning Inventory for Medical Students, Version 2, (ADLIMS 2) was developed by Newble et al. to determine whether students typically use predominately a surface, deep, or strategic approach to learning and to obtain additional information on other aspects of studying known to affect learning. The ADLIMS 2 is a 53-item, Likert-type inventory. Cronbach alpha reliability coefficients for the main scales and subscales ranged from .45 to .87, showing most achieved values acceptable for this type of inventory. Factor analysis showed that the surface, deep, and strategic approaches, as well as a poor study behavior factor, explained 66.3% of the total variance, a figure in excess of that obtained with other well-known inventories of a similar type, such as the Lancaster Inventory. A test-retest study on the ADLIMS 2 showed moderate to high correlations for each subscale, with correlations ranging from .50 to .87.

The ADLIMS 2 was utilized in the present study to profile physical therapist students' tendencies to approach learning in a surface, deep, or strategic manner. Minor modifications in the wording of 9 of the 53 items on the instrument were made to either reflect more closely the American higher education system and physical therapy curricula or to change the reference from a single course to physical therapy curricula in general. For example, the statement "I often find myself questioning things I read in books or hear in lectures, tutorials, or ward rounds" was changed to "I often find myself questioning things I read in books or hear in lectures, labs, or clinical experiences." This component of the study was conducted at a national level to shed light on the overall approach to learning tendencies of the physical therapist student population. A total of 1,567 ADLIMS 2 survey questionnaires were distributed, and a total of 716 survey questionnaires were returned and analyzed, resulting in a return rate of 45.7%.

Because I wanted to know the approach to learning profiles of the 24 interview participants but could not identify their ADLIMS 2 surveys due to the anonymity of the survey process, these students also were asked to complete a 9-item screening instrument (3 questions each from the surface, deep, and strategic scales) to provide insight into the profiles.
Table 1

Characteristics of Student Samples

<table>
<thead>
<tr>
<th></th>
<th>Interview (N=24)</th>
<th>Survey (N=716)</th>
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</thead>
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<tr>
<td><strong>Sex</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Female</td>
<td>54.2%</td>
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</tr>
<tr>
<td>Male</td>
<td>45.8%</td>
<td>25.7%</td>
</tr>
<tr>
<td><strong>Age (y)</strong></td>
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<td></td>
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<tr>
<td>X</td>
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<tr>
<td>Range</td>
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<td>19-53</td>
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<tr>
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<tr>
<td>Public</td>
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<td>56.1%</td>
</tr>
<tr>
<td>Private</td>
<td>33.3%</td>
<td>43.9%</td>
</tr>
<tr>
<td><strong>Institution (physical therapy school)</strong></td>
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<td></td>
</tr>
<tr>
<td>Public</td>
<td>66.7%</td>
<td>55.0%</td>
</tr>
<tr>
<td>Private</td>
<td>33.3%</td>
<td>45.0%</td>
</tr>
<tr>
<td><strong>Region</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Midwest</td>
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<td>50.6%</td>
</tr>
<tr>
<td>East</td>
<td>—</td>
<td>20.8%</td>
</tr>
<tr>
<td>South</td>
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</tr>
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</tr>
<tr>
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</tr>
<tr>
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<td>33.3%</td>
<td>39.1%</td>
</tr>
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<td>—</td>
<td>0.1%</td>
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<tr>
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<td>DPT</td>
<td>—</td>
<td>6.8%</td>
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<tr>
<td><strong>Physical therapy experience</strong></td>
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<td></td>
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<tr>
<td>Volunteer</td>
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<td>41.2%</td>
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<tr>
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<td>49.6%</td>
</tr>
<tr>
<td>None</td>
<td>—</td>
<td>9.2%</td>
</tr>
<tr>
<td><strong>Employed/hours per week</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>No</td>
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<td>46.4%</td>
</tr>
<tr>
<td>Yes</td>
<td>70.8%</td>
<td>53.6%</td>
</tr>
<tr>
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<td>2-10</td>
<td>1-52</td>
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</table>

of their preferred approach to learning. These 9 items were taken directly from the ADLMS 2 instrument.

**Interview data.** The 24 participants were selected to represent 2 different years in each of the physical therapist education programs. After obtaining informed consent, each student was asked to complete the 9-item ADLMS 2 screening instrument. I did not review the screening instrument until after the interviews. Each student was then asked for demographic information. This introduction was followed by a series of questions (see Appendix) designed to gather information about the students' perceptions of specific learning experiences and their approach to learning for those experiences in 2 of the courses in which they were currently enrolled. Students were interviewed about 2 courses taught by different faculty members to determine if different learning experiences designed by different faculty shift a student's approach to learning. In total, experiences from 12 courses were discussed. Each course was discussed with 4 currently enrolled students. I summarized responses back to the participants to ensure accurate understanding. All interviews were audiotaped for later verbatim transcription. Prior to the study, interview questions were pilot tested on 2 physical therapist students outside the target population to ensure question clarity and response. Based on their recommendations, appropriate clarifications were made.

**Data analysis.** The taped interviews were transcribed verbatim, and field notes were reviewed on an ongoing basis. I focused on analyzing the data based on the conceptual framework constructed at the beginning of the study. Using a process of content analysis, dominant categories and patterns were identified, coded, and categorized throughout the data.29 As major concepts or themes surfaced, they were chronicled and charted. The quantitative survey data were utilized to help inform the qualitative data and description.

**RESULTS**

**Survey Results**

Table 2 displays the survey responses of the ADLMS 2 when the subscales are added together into overall surface, deep, or strategic profiles. Comparing the means of the surface, deep, and strategic subscales and overall profiles, it appears that physical therapist students' profile of approach to learning tends toward a deep or strategic manner more than a surface manner. Further information on the results of this study is planned for a future article.

Table 3 summarizes the results of the 9-item approach-to-learning screen that was taken by the 24 students participating in the interview portion of this study. As with the national sample, the means indicate that this group of physical therapist students also appears to approach learning in a deep or strategic manner more than a surface manner.

**Interview Results**

The 24 participating students were asked how they approached learning in specific courses and for specific learning tasks (eg, exams, labs, papers) in 2 different courses in which they were currently enrolled. Students were initially asked, "What is your goal when preparing for or completing a learning task for (course name inserted)?" The majority of students (n=15) described goals that indicated a deep-learning intent for both of the courses discussed. This deep-learning intention was particularly evident when they found the class interesting and could see the relevance of the course content.
The goal is just to experience and look for thoughts and experiences and considerations that I hadn’t considered or consider more deeply, and also to consider some other opinions that I would never come up with based on the discussion in class.

That class is very interesting to me. I actually do try to learn as much as I can because I find it applicable and interesting learning. … [My goal is] to really understand it in my own mind, not just be able to recall the information.

Nine respondents described learning goals that indicated a surface or strategic learning intention for at least 1 of the 2 courses that were discussed. Lack of interest and inability to see the relevance of the course were the most common reasons expressed by these respondents. A quote illustrating this point is:

I’m just trying to get by…as far as learning the basics, all the background behind the theories… All the background they gave us, we all just memorized it and tried to learn all of the stuff…. There was no clinical relevance.

Students were next asked, “What approach to learning/studying allows you to reach that goal in (course name inserted)?” Although the majority of respondents had indicated deep intentions for learning in the courses, 21 of the 24 students described processes indicating that they utilized surface/approach methods in one or both of the courses:

Go over all the material, go over it, repeat, repeat, repeat, repeat, get together with classmates, quiz. That’s how we do it…role memorization.

All 24 respondents indicated that they also used some deep/approach processes in one or both of the courses:

I try to think about it when I’m doing stuff—watching stuff on TV, sports, whatever. I think about it a lot more than people you see walking down the street. You become a people-watcher. You’re walking in the mall or something, and you see a problem, and you say, “I’d like to do this test on them, and this is how I would do it,” kind of thing.

Interestingly, of the 15 students who had indicated deep/approach intentions for their learning in both of the courses discussed, 9 went on to describe nearly all surface/approach learning methods for one or both of those courses. Only 4 respondents who had described their learning goals for both courses in terms of deep intentions also went on to describe nearly all deep/approach learning methods for both of the courses discussed. Results from the remaining interview questions, designed to gather information about the students’ perceptions of and approaches to learning experiences, revealed several themes or factors that influenced students’ approach to learning:

Relevance and context. Multiple students in all 12 of the classes talked about the importance of relevance or context to their learning. Students stated that when this connection was made, they tended to better understand and retain what they were learning and felt more confident and ready for clinical experiences:

We’ll tell us all these theories behind different things and why we do things the way we do. So in class I think you retain it more, because it’s being more applied to “This is why we do it this way,” explains it more, and so then I think it helps you retain it.

Table 2

<table>
<thead>
<tr>
<th>Approach</th>
<th>Minimum Percentage</th>
<th>Maximum Percentage</th>
<th>X</th>
<th>SD</th>
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</thead>
<tbody>
<tr>
<td>Surface</td>
<td>0.00</td>
<td>88.89</td>
<td>43.02</td>
<td>15.25</td>
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<tr>
<td>Strategic</td>
<td>6.67</td>
<td>100.00</td>
<td>54.12</td>
<td>14.67</td>
</tr>
<tr>
<td>Deep</td>
<td>25.00</td>
<td>95.00</td>
<td>59.81</td>
<td>9.72</td>
</tr>
</tbody>
</table>

They give us some kind of clinical relevance… Every time they’ll show us…a diagonal, they’ll say, ‘Okay, with this kind of patient in the clinic, you’d be using this.’ That part helps a lot because then you can visualize it.

Students who could not see the relevance of a topic or who had no interest in the topic admittedly “tuned out,” devalued, and de-prioritized the course, spent less time on it, and did not only what they felt was necessary to get a decent grade (ie, surface learning):

Right now, it’s just to get the assignment done for the professor. I feel like I’m coming into this thinking that there are so many other things that I need to master… So basically my goal is to do what the professor says and meet those requirements and that’s it… It’s hard for me to see the real relevance to me right now.

Just get it done. Get it done and get it in on time because that class seems like it’s… I don’t really see much of a point to it… I would say, get it done, give the teachers the answers they want, and just get it out of your hair.

Providing relevance, especially clinical application relevance, was the most common response when students were asked what could be changed to improve their learning.

Assessment methods. When asked about typical assessment methods and how they prepared for them, the student respondents indicated that the use of written, objective examinations was the most common assessment in 9 of the 12 courses discussed. To prepare for these assessment activities, they typically utilized methods targeted at memorization and recall of information, that is, surface approaches:

Reading, highlighting, and then going back and re-reading my highlighting, and then going over the notes a couple of times before the test.

Students often mentioned the impact that a sur-
face approach had on their long-term retention of knowledge:

A lot of people I know—they’re in the program—that have trained themselves just for recall and then a week later I can talk about something. They go, “I don’t remember.”

A few students described how they approached assessment activities that had a reflective component, such as essay questions on exams and reflective reading and written assignments. A deep approach was nearly always described:

... if it doesn’t mean something to me, I can’t understand it anyway, so I don’t consider that part of my learning load. It’s [reflection] mandatory. If I can’t self-reflect and bar it, then I don’t mean something, I won’t remember it. I won’t use it. I can’t understand it, so I self-reflect as I’m learning it, and once I learn it, I already know what it means.

So it [take-home exams]. It’s kind of a lot of thinking back to exams that we’ve had in class, people I’ve seen, trying to make connections between the cases that we’re having in the assignment and people... Examples we’ve been given or just treatments that I’ve seen or stuff like that.

Content overload/lack of time to use deep approaches. Themes from the student responses that appear to inhibit students' ability to approach their learning in a deep manner are too much content in the curriculum and lack of time for lab practice, reflection, reading completion, and so on. These responses were given by multiple students in 10 of the 12 classes discussed. Students readily admitted that they cannot stay on top of all the courses and they operate in the mode of “What test is it today? What do I have to do for this week?”

Quotes illustrating this point include:

The problem is that I think you get so strapped for time, and as much as you’d like to learn more, you have so much going on that you don’t have time to always take that extra step, and that gets very frustrating for any class because they’re just studying for exams and you wish you could do more... But there’s just not enough time... I think it’s hampered my learning... I don’t retain that information for very long...

But I just feel like we’re getting so much information and, like I said with clinicals, not being able to use it right away. And then it’s... gone, and you spent all that time learning it, but you obviously are not going to retain it when you move on. And that’s been very frustrating.

Teaching methods. Multiple students from all 12 classes that were discussed reported prolonged use of passive teaching methods leads to boredom, loss of interest and motivation to try to understand and learn, and potential adoption of surface learning approaches to deal with the course. Interestingly, the use of PowerPoint* was mentioned by several respondents to illustrate this point:

Get rid of the PowerPoints. Those just put you right out. Have a more unstructured lecturing style where the discussion can go wherever it needs to clarify... definitely interactive.

I feel it’s not great learning because sitting in a dark room, watching a PowerPoint for an hour or 2, then throw a worksheet at us and it’s pretty much listed straight down. It’s boring. It’s not fun learning.

In contrast, when students were involved in constructing their own knowledge, they tended to describe deep approaches to learning. A number of students mentioned their enjoyment at being challenged or actively engaged in learning in the classroom. Multiple respondents in all 12 of the classes examined spoke positively about an interactive classroom:

During lecture oftentimes new material will be presented, but as the new material is being presented, she’ll often pose questions and kind of challenge the class to come up with the answer even though we’ve never had this, based on the level of understanding that we have. So... keeps you engaged and challenges you to understand what’s going on.

A majority of student respondents talked about how deep learning processes are promoted when they can apply what they are learning to real patients:

But for me [the learning occurs] when I see real patients. I think that the theory for me comes when I can apply the practical information, that it’s hard for me just to memorize theory just for the sake of memorizing theory... We had this patient who came in. We think she has fibromyalgia. I know nothing about fibromyalgia. It really pushed me to go home and look at everything I have to find out what I know I can get about fibromyalgia and I think that could be done more...

Peer discussion/studying. Students in 8 of the 12 classes examined described how reflective time with peers and discussion of classmates’ experiences in the clinic helped promote deep approaches to learning such as enhanced understanding and increased critical thinking:

The most beneficial part is... getting together with a couple of other students and discussing... if we have lists of objectives, going over that, learning from the other students. Everybody kind of picks up and has a little bit different angle on what we’ve been learning, and I usually find that pretty beneficial.

It’s really good, especially when we have time to [practice techniques] on our own. Then when we get done, we just, a lot of times, we’ll just be talking with people about how they did it or just be sitting there waiting, and maybe someone will say, “We did this in the clinic, and actually it works a little bit better this way,” or something like that, or maybe there’s a different twist to it or something. But we think about it a lot more critically.

Learning sequence. Several students in over half of the classes discussed described their best learning in terms of sequencing of learning events. A preferred sequence appears to be receiving information, preferably in interactive modes and short units of time (versus long passive lectures), then time to practice skills or discuss information, followed up by actual, or closely simulated, application in a clinical setting when possible:

Interpersed clinical [time] would be awesome. Like say after a new concept, to go out to a clinic and see it being done.

I wish they would incorporate PowerPoint in the lab as far as, because... in [class] we always go into lecture for an hour, we sit there, we listen, and then we go into the lab and apply it. I think if they could take and put the PowerPoint in the lab and maybe take 5 minutes, explain something, then go apply it right away, and then go back and explain another 2 or 3 PowerPoint slides and then go back right away. I think it would help tremendously. Honestly, I don’t get a lot out of lecture.

Learning environment. Perceived lack of faculty enthusiasm for teaching, lack of organization, egotistical attitudes, intimidating presence, and...

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experiences that set up a negative student-teacher relationship were all described as being detrimental to learning. These responses were given by multiple students in 10 of the 12 classes discussed. Students typically went on to describe surface approaches to learning to “get through” these learning situations or courses:

Oh my, it’s so detrimental. It just puts up a wall that I cannot talk to this person… I can’t go to this person about a problem… You don’t want to ask them questions about things in general or things about the class specifically.

Positive presence factors described by multiple students in 11 of the 12 courses examined included instructor accessibility, enthusiasm for teaching, use of humor, concern with helping students to understand, and valuing students’ input. The students described how these factors tended to contribute to their motivation to participate in learning by making them feel comfortable asking questions or making mistakes; they generated interest in the course and ultimately appeared to move students toward deep processes of learning:

I know that the core group here really tries to help us and feels they’re here for us and because they love their field… So that makes it a lot easier to be wrong and to ask questions and to feel [okay when] like maybe you should know this already or whatever.

DISCUSSION

The students in this study clearly showed that their motivation and intention are oriented toward deep learning. As physical therapist students, their motivation is to understand what they are learning and to see the application to physical therapy. This premise is supported by the ABLEMS 2 screen that was completed by the student-interview sample as well as the profile obtained on the national sample of 715 physical therapist students. Both profiles showed the deep and strategic approaches to learning preferred over a surface approach.

While both the survey profile of physical therapist students’ approach to learning and the majority of interview responses concerning intentions for learning goals indicated that the students prefer to approach their learning in a deep manner, the majority of interview respondents went on to report the use of surface learning processes when asked to describe how they approach specific learning tasks. Only 4 students who described deep intentions for their learning goals went on to describe predominately deep approach processes to various learning tasks. This discrepancy indicates the likelihood of external factors influencing how physical therapist students approach their learning and of students adapting their learning approach to what they perceive and believe is required of them. The external factors identified in this study that appear to influence how students approach their learning, particularly the processes that students utilize to prepare for and complete learning tasks, broadly include students’ perceptions of teaching methods, assessment methods, the learning environment, and curriculum overload.

Teaching Methods

The single most important point that the students in this study conveyed is the importance of being able to see and understand the relevance of what they are learning. Having an interest in the topic is also critical to student learning. Research suggests that at the level of the learning task itself, perceived interest and relevance increase intrinsic motivation and encourage a deep approach.53-55 Findings from Graham55 and Titchen and Coles56 further indicate that learning environments for physical therapist students that provide an authentic context facilitate favorable learning processes. In a broader context, evidence for the influence of contextual learning and relevance on approaches to learning comes from comparisons done by Newble and Clarke57 between a traditional medical school and one that emphasized problem-based learning. In traditional medical education, the emphasis on the initial learning of detailed factual information unrelated to clinical situations was found to be associated with higher levels of reproducing (surface) orientation and lower levels of meaning (deep) orientation. The reverse was true of the problem-based medical curriculum.

This study supports these previous findings. On the one hand, physical therapist students who could not see the relevance or who had no interest in the topic (often because they could not see the relevance) admitted, “tuned out,” devalued, and de-privatinized the course, and did only what they felt was necessary to get a decent grade. This lack of interest and inability to see relevance typically translated into a surface approach to the learning in that course. On the other hand, teaching that helped students see the relevance of what they were learning and that captured their interest facilitated deep approach processes. This facilitation occurred by helping students make connections between theory and practice and understand the “why” behind what they were learning. Students stated that when these connections were made, they tended to better retain what they were learning and felt more confident and ready for clinical experiences. Teaching methods described by the students that enhance relevance include learning in context through case studies based on real-life situations, exposure to real patients and clients, and instructors’ stories, examples, and clinical experiences. All of these methods tend to bring issues and knowledge to life for the students through the richness provided by human experience. This relevance may be lost when information is presented with more conventional, abstract, and impersonal lecture methods. These findings support constructivist learning theory, which implies from the belief that students actively construct their understanding that teaching strategies must shift from the teacher explaining a process and the students practicing to actively involving the students in ideas and authentic problem situations from which understanding may emerge.55,56

Teaching practices that appear to shift students toward surface processes in their learning included long 3- to 4-hour classes, passive teaching methods such as extended lectures, and poorly organized courses or activities. The use of PowerPoint presentations was mentioned in a negative light by a number of students, particularly when the room was dark and the instructor tended to read the PowerPoint slides during much of the lecture. Students’ perceptions of such learning experiences were that they were “boring,” that it was difficult to concentrate for such long periods, that they felt overwhelmed with too much information at one time, and that frustration often set in. It is noteworthy that students reported that once boredom and frustration reach a certain level, they lose interest and motivation to try to understand and learn. As a result, students often adopt surface methods to deal with the course (eg, cramming for exams, avoiding the course readings). Ramsdell58 recommended the use of simple activities such as asking students to describe what steps they went through when writing a paper or preparing an assignment to provide revealing comments on students’ perceptions of instructional requirements, as well as to provide students with insight on their learning processes. Such activities may help both students and teachers learn what could enhance the teaching-learning process.

Assessment Methods

For the 12 courses discussed, students reported that the main assessment methods in 9 of those courses were written objective exams (most often multiple choice) and practical exams. The students reported that they typically approached their preparation for the written objective exams by memoriz-
tion, recognition, and recall methods of studying (e.g., repetition, note cards, quizzes each other). This finding suggests that the exams are focusing on the recall of factual knowledge. Take-home exams with recall questions and activities also were approached in a surface manner. This finding concerns with the findings of other researchers that students used rate-learning processes to cope with tests that depend on detailed factual knowledge.2,3,99

Practical examinations elicited a combination of surface and deep processes in the majority of students. There was still a focus on reproducing skills as demonstrated by instructors, however, similar to findings by Seale et al.,48 students were motivated by obvious clinical relevance to understand why and when they would use the different skills. As a result, they pursued activities such as discussion with classmates and teachers or practice with case scenarios to promote that understanding. When the practical examinations involved the use of patient case studies rather than just demonstration of techniques, students also reported increased understanding and ability to integrate information.

Deep processes were described by 85% of the students who had to prepare for and complete assessment methods requiring reflection (versus recall) and more open-ended assignments. These processes include making connections between past experience or knowledge and new knowledge, looking for meaning, personalizing knowledge, and integration of information. These findings are similar to those of Thomas and Bain,13 who found that student teachers enrolled in a psychology course reported greater use of transformational (deep) activities for open-ended assessments than for closed exams and conversely less use of recall activities with a written assignment than with the short-answer and closed exams. Students studied by Entwisle and Tate55 also described a connection between assessment that emphasized factual information and a surface approach to learning.

The majority of physical therapist students indicated intentions of understanding (deep learning) for their goals in a course, yet reported processes of reproducing for much of their assessment activity. This finding lends support to the premise that different forms of assessment influence and shape how students approach learning. Interestingly, Marton and Säljö found that asking questions designed to encourage a surface approach shifted students who had originally used a deep approach toward using a surface approach. Questions meant to encourage a deep approach, however, were less effective in shifting students toward a deep approach. The researchers concluded it is easier to induce a surface approach than a deep one. This finding may help explain the seeming case with which physical therapist students move toward a surface approach in spite of deep intentions, particularly when a reproducing focus to assessment is predominant.

Students talked about their concern about the outcome of their learning when utilizing surface processes to prepare for exams. Most notably, the students reported difficulty with retention of the knowledge following exams and concern over a surface level understanding of information. Marton and Säljö also found a relationship between students' approaches to learning and their subsequent level of understanding. They found that students with a deep approach had more complete understanding and were able to remember more details, both immediately and several weeks later, than those who approached learning in a surface manner. This surface level of understanding reported by physical therapist students may be hidden by the type of assessment being used with the students.53 That is, student performance may be excellent on an exam oriented toward recall, "hiding" the fact that they have only a surface understanding of the material. In addition, students who have surface levels of understanding are unlikely to be able to transfer concepts studied in one context to different and unfamiliar problems.53 Shulman described this problem with learning as inertia, a condition where students come to know something but cannot go beyond the facts, synthesize them, use them in their thinking, or apply them in another situation. This problem is demonstrated in physical therapy education when a student begins the clinical-education component of the curriculum and has difficulty transferring didactic learning into clinical practice. Clinical instructors and faculty may wonder how the student got so far in the program, apparently performing well. Assessment methods that require only a surface understanding or a recall of information may be a contributing factor.

It appears that the physical therapist students in this study are capable of deep or surface processes and that the variation in approach occurs across assessment contexts and formats. This finding suggests that the students are adopting approaches strategically rather than stylistically; thus, changing assessment formats may influence how students approach their learning.51 Students appear to respond actively to the messages being sent by assessment processes by choosing surface or deep strategies and methods that will maximize success.

Learning Environment

Several students in this study talked about the positive or negative effects of the learning environment established by individual instructors. Much of what they described had to do with the presence and demeanor of the faculty member. The impact of teacher presence has been reported by Eble,53 who noted that the details students remember about teachers often have more to do with aspects of the teacher's presence than of any specific knowledge. Positive presence factors (enthusiasm, attitude, accessibility, humor) tended to contribute to students' motivation to participate in learning by making students feel comfortable asking questions or making mistakes; they generated interest in the course and ultimately appeared to move students toward deep processes of learning.

Negative presence factors (egotistical attitude, intimidating presence, lack of trust) resulted in physical therapist students reporting decreased interest in a course, discomfort in asking questions and making mistakes, and decreased learning in these situations. As Reinhold pointed out, "the very right to teach in specific instances can only be granted by the student."49 If the student's openness to learning has shut down, teaching has thus been effectively cut off. Students typically described surface approaches to learning to "get through" these learning situations or courses.

Curriculum Overload

Closely related to learning environment, students' perception of a heavy workload is a major external factor that influences how the physical therapist students approach learning. Students had numerous concerns about time constraints that led to inadequate time to practice; an inability to absorb, process, and reflect upon information; feeling overwhelmed; and an inability to complete assigned readings. This heavy workload translated directly into movement toward surface processes and a surface approach to learning. Students readily admitted that they often operate in a mode of "What test is it today?" with no time to do more than study for the next exam (most often utilizing memorization processes) and frequently cramming to prepare for exams that come in rapid succession. Feelings of stress and being overwhelmed also tend to promote these surface processes. This finding supports previous research reports showing that a lack of opportunity for self-determination, a perceived heavy workload, time pressures, and too much information that does not encourage students to adopt superficial approaches to study.35,54,55,56

IMPLICATIONS

The results of this study suggest several implica-
tions for physical therapist educational practice.

There is evidence that physical therapist students prefer to approach their learning with deep or strategic motivations and processes. The results of this study support Van Laanenberche's and Riche and Coles’ findings that physical therapist students possess desirable approaches to learning. Both the survey and interview data indicate that physical therapist students prefer a deep or strategic approach to learning and have deep intentions (i.e., understanding and personal meaning) for the courses they are taking.

Physical therapist educators need a better understanding of the effect of context on learning. The students’ need for understanding the context or relevance of what they are learning surfaced repeatedly in the results of this study. This linkage appears to be a critical point in motivating student interest, motivation, and understanding and supports Noddings’ warning that students will learn what they choose and “make their own” only what is significant to them. Faculty must need to be more deliberate in linking what they are teaching to a clinical, professional practice, or other context to assist students in seeing the relevance of the material. They also must recognize that passive learning, according to the students’ accounts, often fails to make a topic interesting or relevant to their lives.

Assessment methods must be reviewed to determine what they are asking students to do. More than anything else faculty do in the classroom, assessment methods tell students what the teacher considers important. The literature and this research suggest that methods of assessment influence students adopting surface or deep processes to prepare for assessment. Assessment tasks requiring understanding of knowledge, reflective and creative thinking, and integration of previous and new knowledge show evidence of promoting a deep approach to preparation and learning. Assessment tasks that require recall or recognition of information and facts are reported by students to promote surface approaches to learning, such as rote memorization.

Establishing learning environments and faculty-student relationships more supportive of a deep approach to learning has potential for promoting deep learning approaches. Reimann stated that adult learners discover that for many kinds of learning experiences peers are the richest resource, and as a result an atmosphere of cooperation versus competition should be promoted. Student data from this study indicate that this recommendation is valid and is one aspect of a learning environment that promotes student understanding and deep process such as reflection with peers and the sharing of ideas through discussion. Besides promoting cooperative peer interaction, faculty may need to increase the attention they pay to the student-instructor relationship. Those relationships that students perceive as positive foster deep processes by promoting student questioning, interest, and motivation to meet instructor expectations, while those perceived as negative relationships appear to foster surface or surface-strategic approaches due to the opposite effects.

Physical therapist education programs must take a hard look at the workload demands they are placing on their students through their content-based curricula. It is clear that these curricula are influencing student learning in a negative way by promoting a surface approach to learning. Students express awareness that they are choosing surface strategies, but often perceive them as the only way to manage the demands. Faculty must seriously ponder the question raised by the students in this study, “Are you more concerned with quantity than quality?” The majority of students are plenty more interested in the quality of what they are learning than they are in how much the course covered. Student outcomes advocated by most physical therapist education programs include critical thinking, problem solving, and lifelong learning skills. These outcomes are facilitated by deep approaches to learning and are inconsistent with instructional and assessment methods that promote surface processes. If faculty are serious about these outcomes, they must come to terms with the possibility that much of what they are doing may be promoting surface approaches to learning and directly sabotaging their intended outcomes.

Limitations of the Study

The nonrandom selection and the small sample size of participating programs and students in the qualitative component of this study may not represent a large sample of physical therapist faculty and students throughout the United States. This factor limits the generalizability of the qualitative findings. Comparable studies with comparable samples from other regions of the country need to be done and analyzed for similarities. The fact that the students who participated in the qualitative interviews were essentially self-selected was an additional limitation. It is not known whether the beliefs, opinions, and experiences of the students who chose not to participate or could not participate due to sample size restrictions would be similar to the 21 students who participated in the study.

This study also examined a limited number of factors that may influence students' approaches to learning (i.e., educational factors in the academic environment). Other conditions such as educational factors in the clinical setting, student development or maturation, and social or cultural influences were not explored.

Directions for Future Research

Although this work provides important information about physical therapist students' approaches to learning and the influences on approaches to learning, the results are preliminary in nature. The results of this study suggest that a student's approach to learning is strongly influenced by instructors' instructional methodologies, as well as curricular demands. Further detailed study of how specific learning experiences are perceived by physical therapist students and how these experiences influence the learning-approach processes of the students is needed. Recommendations for specific changes in teaching, assessment, and curricula that would encourage students to fully develop deep approaches and processes to learning could then be made.

Study by physical therapist faculty of their students in their own classroom settings to improve educational practices also is indicated. Classroom research as advocated by Cross could be adopted as a way for teachers to become more involved in not only what the students are learning, but also in the quality of that learning. Comparisons of how students approach different learning experiences provide an example of potential classroom research. Longitudinal studies, following physical therapist students through their professional education, may reveal the impact of various types of learning experiences on their approach to learning, as well as indicate whether their approach to learning changes from the beginning to the end of physical therapist school. Comparisons of whether problem-based or other innovative curricula influence student approaches to learning differently than traditional physical therapy curricula also may help shed further light on what factors influence students to use a deep approach to learning.

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Appendix

Course-Specific Interview Questions Asked About 2 Different Courses Taught by Different Faculty Members That the Participant Is Enrolled in During the Term

1. What is your goal when preparing for or completing a learning task for ______________________ (course name inserted) course?

2. What approach to learning/studying allows you to reach that goal in ______________________ (course name inserted) course? Why?

3. Describe a typical assessment task in ______________________ (course name inserted) course. By assessment, I mean how your teacher is evaluating and grading your learning. How do you prepare for this type of assessment?

4. Describe the teaching in ______________________ (course name inserted). Describe how well you learn in response to this type of teaching.

5. Describe what steps you went through when preparing for ______________________ (learning activity determined from the course syllabus).

6. a. What one factor that the teacher does is most effective in enhancing your learning in ______________________ (course name inserted)?
   b. What one factor that you do is most effective in enhancing your learning in ______________________ (course name inserted)?
   c. What one change that the teacher could make would be most effective in improving your learning in ______________________ (course name inserted)?
   d. What one change could you make that would be most effective in improving your learning in ______________________ (course name inserted)?

7. Is there anything else you want to add about teaching or learning in your courses that I didn’t ask?

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