

HANDBOOK OF

TEACHING
and LEARNING
for PHYSICAL
THERAPISTS

Gail M. Jensen • Elizabeth Mostrom



ELSEVIER

THIRD EDITION

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FOREWORD

Understanding the essential concepts behind the acts of teaching and learning is critical for all physical therapists. There are any number of factors which can impact learning needs and preferences; generational and cultural differences are two examples. To be an effective instructor and achieve optimal outcomes, physical therapists in both the academic and clinical settings need be able to teach considering the learning needs and preferences of their students/patients and know how to modify their teaching to facilitate learning.

Part of facilitation is a learning process on the part of the clinician; a process of learning how health care professionals can work together in today's complex and dynamic health care environment to build a safer, patient-centered, community-oriented health care system. For optimal health outcomes, physical therapists' focus has to expand from individual patient care to encompass a wide range of interprofessional interactions and include an understanding of community and population health needs that might affect their patients health related quality of life.

The use of technology in health care is now mainstream, with electronic medical records, patient simulations, the advances of telemedicine, and the use of robotics in patient care. Whether digital natives (Generation X) or immigrants (Boomers), physical therapists need to understand how to effectively use technology to promote learning.

The third edition of *Handbook of Teaching and Learning for Physical Therapists* continues to address the foundational concepts of teaching related to contemporary physical therapy practice across the professional continuum—from student to novice practitioner to clinical or academic educator to advanced clinical practice—but it has also expanded the scope of inquiry from the first two editions to include the technological and interprofessional facets of modern clinical care mentioned above. With this text, leaders in physical therapy education become the readers' mentors by sharing their experience and expertise and promoting excellence in educating patients and the next generation of physical therapists.

PREFACE

The preface of a book is very important as it provides the reader with the authors' personal insights about what this book means. For us, we believe that there is nothing more important and central to the work of physical therapists (PTs) and physical therapist assistants (PTAs) than teaching and learning. We also subscribe to the notion that if there is no evidence of learning from patient, student, caregiver, or colleague then there is no evidence of teaching. In practice, we cannot succeed without the patient working with us as much of our practice relies on human performance as the ultimate outcome. As educators, the outcomes for our students lies in their learning and who they become and what they do.*

Every day PTs and PTAs are engaged in teaching and learning. They design and implement strategies to facilitate change in patients' health behaviors, demonstrate lifting techniques to family members, guide students through clinical internships or clinical residencies, present in-service programs or grand rounds to their health care colleagues, deliver professional presentations at local and national meetings, serve on curricular committees or program advisory boards, plan and implement health promotion programs for members of the community, and consult with teachers in the local school system. Perhaps no process other than teaching and learning so permeates the professional contributions made by members of the physical therapy profession.

Teaching is a skill that PTs often take for granted. We have all experienced many years of being taught; that is, we have been apprentices of teaching and teachers through our life experiences as learners. During these years, we have observed both effective and ineffective teaching. Ineffective teaching can leave teachers and students frustrated and alienated from learning more about teaching—or, at worst, learning more about anything at all. Few PTs and even fewer PTAs have been exposed to the substantial and informative body of knowledge, research and theory that exists in education. From observing expert teachers at work, we know that skill in teaching requires much more than knowing the material, illustrating lectures with PowerPoint, or learning how to construct a valid examination. Effective learning experiences are crafted by expert teachers, suffused with practical and theoretical knowledge, compellingly delivered with accurate insight into the needs of the learner, and constantly assessed and improved.

This handbook has emerged from an ongoing dialogue and reflection on our own experiences as PTs, educators, and educational researchers. Our interest and background in educational theory is tied to a specific belief and value about the central importance of teaching and learning to

those practicing physical therapy. We believe deeply that evidence of *learning* is what matters most. We embrace learning as a threshold concept for the profession. By that we mean it is a portal or window that provides us with a new way of thinking about something and that new way of thinking results in a transformative experience. Our hope is that this third edition of the handbook will provide you with new insights and renewed perspectives on the critical importance of teaching and learning in physical therapy. (Jensen ref)

Consistent with lifelong learning, we ourselves are committed to providing the reader with a text that is driven by inquiry and reflection. We believe that one is always a teacher *and* learner in physical therapy practice. These roles are constantly interchanging. The PT and PTA must initiate and engage in both roles to do either one well. We also believe that teaching and learning within the clinic or classroom is always more chaotic and complicated than what theory may account for, and constant inquiry and adaptation are essential skills for understanding and improving teaching and learning. Theory does provide a framework for understanding practice, and practice yields ever more useful theory. Thus, a dedicated commitment to ongoing inquiry and deliberative reflection—that is, becoming a reflective practitioner *and* educator—is needed to teach and learn in chaotic settings and maintain an essential and iterative dialogue between theory and practice.

In an effort to link theory and practice in this text, we have invited expert contributors known for their practical experience in “the real world” as well as their theoretical understanding and expertise. By including these expert contributors, we are celebrating the learning community of scholars in physical therapy education who are reflective and responsible stewards of their work.

As qualitative researchers, we are committed to understanding teaching from the inside—that is, from the individual and collective experiences of learners and teachers. You will read stories from the “trenches” of practice in each chapter. We hope these examples of your colleagues at work as teachers will facilitate your intuitive understanding of some of the broader conceptual issues proposed.

Teaching and learning are perhaps the most important skills a PT and a PTA can acquire. Development of sound, practically relevant, theoretically based educational strategies can result in significant reform in our ability to perceive, understand, and foster expansion of knowledge, insight, and skills for students, patients, colleagues, and the public.

* Jensen GM. Learning:What Matters Most, 42nd Mary McMillan Lecture. Phys Ther. 2011;91: 1674–1689.

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Finally, thanks to all those to whom this book is dedicated—the many students and patients who have taught us so profoundly for so many years.

GMJ, EM and KFS

INTRODUCTION

Gail M. Jensen, Elizabeth Mostrom, and Katherine F. Shepard

*"Good teaching comes in many flavors and colors. It occurs when a teacher leads you to a vista that changes forever the way you see. It happens when someone introduces you to a delicious idea that you can chew on for the rest of your life. It occurs when somebody helps you discover possibilities in yourself you didn't know were there. Good teaching is many things. It has no essential quality. It takes place through books, it occurs in classrooms, [in health care clinics and communities], it emerges in conversations and in the presence of those who give us a vision of how life in its large and small moments might be lived."**

*"Try the experiment of communicating, with fullness and accuracy, some experience to another, especially if it be somewhat complicated, and you will find your own attitude toward your experience changing. . . The experience has to be formulated in order to be communicated. To formulate requires getting outside of it, seeing it as another would see it, considering what points of contact it has with the life of another so that it may be got into such a form that he [or she] can appreciate its meaning. . . One has to assimilate, imaginatively, something of another's experience in order to tell him [or her] intelligently of one's own experience. All communication is like art. It may fairly be said, therefore, that any social arrangement that remains vitally social, or vitally shared, is educative to those that participate in it. . . In the final account, then, not only does social life demand teaching and learning for its own permanence, but the very process of living together educates. It enlarges and enlightens experience; it stimulates and enriches imagination; it creates responsibility for accuracy and vividness of statement and thought."***

Purpose of the Handbook

For many students who learn in physical therapy academic settings, the experience is one of struggling to understand and remember an endless array of ill-connected, seemingly inert, knowledge bits. Many of these knowledge bits have a half-life of 3–5 years, and others already are outdated for physical therapy practice in today's constantly evolving health care system. Certainly, the strain of teaching and learning in academic settings is due in part to the knowledge explosion in the sciences as well as in the guiding principles and techniques of physical therapy practice, especially in the many and expanding clinical specialty

areas. Often arguments for "more content" lead to a call for more critical processes. Is there a point at which "less is more"? If so, how much less? What type of "less"? Shulman argues that what is held to be true by any individual or group is intrinsically incomplete and that knowledge is a process of continuous debate, dialogue, deliberation and reasoning.*

For many patients who learn in clinical settings, the experience is one of attempting to focus attention and grasp information under the most difficult of circumstances (i.e., while ill or in pain or experiencing devastating loss). Typically, patients are exposed to rapidly delivered sound bites of important, perhaps even lifesaving, information delivered by a multitude of fleeting health care professionals who are strangers (and who may not even understand or speak the patient's native language). Certainly, some of this strain of teaching and learning in health care settings is owing to the realities of health care delivery systems in which everyone labors under time restrictions that limit access to clinicians and shorten contact with patients and families.

The fragmented learning and embarrassingly limited outcomes that often occur with such experiences in academic and clinical settings are perplexing and sad. However, failures and crises also present us with opportunities to use our ingenuity and strengths as health care providers and teachers. When we find ourselves competing with time and costs to deliver the most effective health care possible, do we find ourselves teaching more? Are we involving the patient as well as family and caretakers much earlier in learning to assume health care tasks? Are we thinking about what we as physical therapists (PTs) and physical therapist assistants (PTAs) can do to facilitate and promote healthy practices in the community? And have we figured out what is essential for novice practitioners to know and how we can prepare them to acquire knowledge and new skills throughout their professional lives? With the continuing growth of clinical residencies and fellowship programs, what are the best ways to mentor therapists in advanced practice settings?

The primary purpose of this book is to stimulate the growth of the reader in teaching and learning by presenting theoretical concepts, current evidence grounded in sound educational research, and related practical applications that will improve skills in the educational processes used in academic, clinical and community settings. Again, we believe that learning is a threshold concept that is foundational in the practice of physical therapy and that learning is a life long process, central to professional development.

* Eliot Eisner, Professor of Education and Art, Stanford University. (Stanford Educator, Spring 1995;3)

** John Dewey (1916) *Democracy and Education*. New York, NY: The Free Press, pages 6–7.

* Shulman, pg 321;2004; Shulman L. *The Wisdom of Practice: Essays on Teaching, Learning and Learning to Teach*. San Francisco, CA: Jossey Bass Pub. 2004.

What is Teaching? What is Learning?

From the perspective of many experienced educators, effective teaching involves the following: (1) deeply *comprehending* the information to be taught, (2) being able to *transform* and present that information in such a way that students “get it,” (3) engaging the student in *active collaborative* learning experiences, and (4) teaching the student how to learn by constant *inquiry and reflection*, which lead the student to acquire her or his own new knowledge and comprehensions. (This teaching process is discussed more thoroughly in Chapter 3.) Similarly, for students to learn, they must comprehend and transform ideas, information, and beliefs through inquiry and reflection during learning experiences in which they, the students, are active participants and collaborators. Such learning results in a change in students’ store of information to hopefully become a framework of knowledge along with changes in behaviors, perceptions, feelings, and interactions.

Because teaching and learning are two inseparable sides of the same coin, designating one person as the teacher and another person as the learner is an artificial distinction, much like saying kinesthetic perceptions and functional movement should be considered as two separate and distinct entities. Just as teachers can shape learners and learning, learners can shape teachers and teaching. For either process to work well, both processes must work in concert. At any given moment, anyone can be the learner or the teacher—patients and families, students participating in formal academic programs or clinical education experiences, health care colleagues, community neighbors, and one’s self.

Characteristics of Good Teachers and Learners

As Eliot Eisner stated, good teaching is many things and comes in many colors and flavors. We think, however, that there are three major components that must be present for good teaching and learning to occur:

1. **Teachers must understand deeply the topics that they are teaching and ceaselessly engage in adding to their knowledge stores.** Teaching is, indeed, an intellectual enterprise. To be continually learning requires curiosity, initiative and intellectual excitement about uncovering more and more about a specific topic or field. Learning means seeking out and engaging in experiences that foster learning—reading, clinical practice, conferences, research, talking with colleagues over coffee and, of course, being stimulated and challenged to learn even more by one’s students. Reflecting on these experiences results in transformation of the knowledge so that it becomes an integral part of what and how one teaches and who one is as a teacher. Where there is no passion for the topic or for teaching, there is no thinking about what and how one is doing and how it might be done better; there is only the repetitive transmission of dusty, uninspired information from yellowed notes. As educational philosopher John Dewey cautioned, “. . . Only when it [communication] becomes cast in a mold and runs in a routine way does it lose its educative power.”*

2. **Teachers must know about the students whom they are teaching.** This awareness and knowledge comes from listening to students speak—learning what they understand and feel as well as how they think and reason, through watching students’ faces, postures, and gestures; observing students perform manual skills; reading student papers; and noting how students interact with people around them. The ability to effectively transform and transmit knowledge rests on understanding students. This understanding undergirds the teacher’s ability to figure out ways to capture the students’ curiosity and interest, to create experiences that challenge students to think and risk, and to persistently support students for the discipline, patience, and sometimes tedium it takes for learning to occur. In this way, teaching is also an emotional and relational enterprise.

The effective teacher remembers well what it is like to be a student. From this memory comes empathy for students in academic settings who must sit through hours of writing down new and often perplexing information, sitting in uncomfortable chairs, and not feeling allowed to move or to speak without permission. From this memory also comes sensitivity to a student’s anxiety about undersupervision and frustration with oversupervision by the clinical instructor. Similarly, practitioners in clinical settings who have encountered illness or physical impairments or disabilities of their own have a greater tacit understanding of how to teach patients to achieve maximum recovery.

Knowing the student is not only easier but a highly pleasurable activity if the student is the only individual being taught, is open and verbal about his or her educational needs, is motivated by the desire and need to know, and is graciously responsive to the PT or teacher’s interest and assistance. However, this situation is rare. The task of knowing a student is clearly daunting when faced with a classroom of 50 or 60 students or a minimally verbal patient who has no family advocate and is scheduled for discharge tomorrow. However daunting, without knowing something about one’s students and how they think, what their values and goals are, and what anxieties or concerns they have about the information or skill to be learned, one cannot teach well. Simply put, if the information being delivered is insensitive or inflexible to the proclivities of the learner, little or no learning occurs.

3. **Teachers must be acquainted with a number of different theoretical approaches and techniques (pedagogy) that can facilitate learning for richly diverse groups of students.** The more one knows about these approaches and techniques, the more innovative, improvisational and flexible one can be in providing learning experiences that match the student’s quest. The military model of teaching often prevails in academic and clinical settings. The military model involves the rigid, repetitive sequence of demonstrating a task to be accomplished, breaking the task into component parts, teaching the component parts, having the student master the component parts, and then putting the components together. This method is certainly effective in teaching a well-known task for which a right and wrong way is clearly demarcated—for example, learning how

* Dewey J. *Democracy and education*. NY, NY: The Free Press. 1916. (page 6)

to assemble and disassemble a rifle. However, it is highly questionable whether this method is responsive to most individual learning in academic or clinical settings, which inherently involves perceptions, attitudes, beliefs, prior learned behaviors, and building-block information that the learner may or may not hold.

There are many intriguing methods that one can use to teach and to assess teaching and learning—problem-solving cases, journals, peer teaching, virtual classrooms and discussions, portfolios, interactive laboratories with experts, stories, community activities, simulations and so forth. By presenting a wide variety of teaching-learning techniques, we hope to engage readers in learning more about them and expanding their teaching, learning, and assessment repertoires.

Overview of the Handbook

This edition of the handbook is generally divided into two main sections. In the first section of the book (Chapters 1 to 7), the focus is on education in the academic environment. All chapters have undergone major revision and updating. This section includes two new chapters, Chapter 6 on Authentic Assessment: Simulation-Based Education and Chapter 7: Strategies for Planning and Implementing Interprofessional Education. The second half of the book, (Chapters 8 to 16), the focus is on education in practice environments. In addition to substantial updates and major revisions to chapters included in the second edition, in this section we have three new chapters: Chapter 10 on What Makes a Good Clinical Teacher, Chapter 11 on Facilitating the Teaching and Learning of Clinical Reasoning, and Chapter 12 on Patient Education and Health Literacy. Although each chapter is designed to be read independently of all other chapters, in some cases understanding will be greatly enhanced if several chapters are read together. For example, the reader would benefit from reading the chapter on preparing to teach (Chapter 2) before reading about teaching and learning in academic settings (Chapter 3). Likewise, preparation for teaching in clinical settings (Chapter 8) will greatly add to one's understanding of teaching techniques used in the clinical setting (Chapter 9) and the discussion of what makes a good clinical teacher in chapter 10.

One final addition is that each chapter has two threshold concepts listed at the conclusion of the chapter.

A threshold concept is one that leads to a transformative change in the way the learner understands an area.* Threshold concepts are essential for learners moving on; that is, to cross a threshold at the doorway to deeper understanding. For our purposes we have asked chapter authors to identify two of these concepts for their chapters as a way to signal the MOST important areas of learning in the chapter.*

The Scholarship of Teaching and Learning

Teachers need to find ways to bring teaching and learning, which are primarily private and hidden activities, into the arena of public and community property. The visible scholarship of teaching and learning needs to continue to grow and flourish in physical therapy. Shulman argues that this scholarship of teaching and learning should be motivated by a spirit of faithfulness or fidelity. This fidelity should include integrity of the discipline; the learning of students; the society, community, and institution where one works; and the teacher's sense of self as scholar, teacher, and valued colleague.**

Our hope is that this *Handbook of Teaching and Learning for Physical Therapists* will continue to evolve over time with the sharing of educational research, intuitive ideas, and practical experiences that are part of the community property of physical therapy education in all of its dimensions. The work of the educational community in physical therapy transcends the ability of any one person and rests with all the members of the community as their work and ideas are critically examined and shared. If the readers of this book grapple with, enjoy, debate, and muse over the concepts presented in this handbook and then share the ongoing development and assessment of their own educational endeavors, we will have come a long way toward creating a true community of educational scholars that will contribute to the learning and development of future physical therapists and the positive growth of the profession of physical therapy itself.

*Meyer JF, Land R. Threshold concepts and troublesome knowledge: Epistemological consideration and a conceptual framework for teaching and learning. *Higher Education*. 2005; 49: 373–388.

**Shulman, 2004. *Teaching as Community Property: Essays On Higher Education*. San Francisco, CA; Jossey-Bass, 2004.

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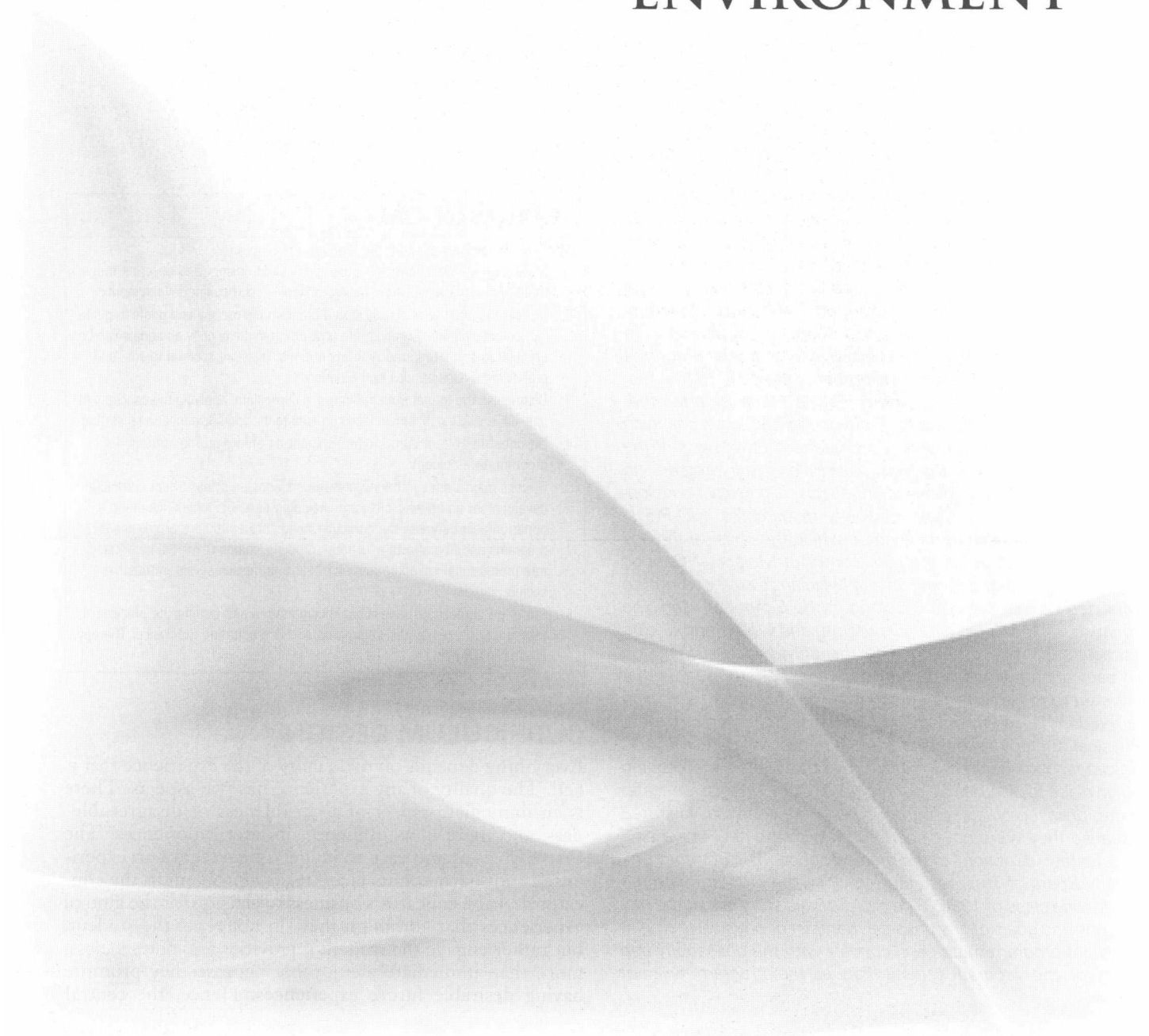
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PART I

EDUCATION IN THE ACADEMIC
ENVIRONMENT



CURRICULUM DESIGN FOR PHYSICAL THERAPY EDUCATIONAL PROGRAMS

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CHAPTER OUTLINE

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Dr. Katherine Shepard shared this story, which has a powerful moral for all educational programs, in previous editions of this text and revisited the story in her McMillan lecture.¹ "In 1983, the physical therapy program at Stanford University was suddenly and without warning told by the Stanford Medical School that we were to terminate the program." The physical therapy program at Stanford University had been associated with the University since the 1920s and had advanced degree programs since 1940. As a young faculty member in the early 1970s, I assumed we belonged at Stanford just as much as any other department in the university. I never realized how changing the philosophy, mission, and expectations in other parts of the university could affect the very existence of our program. In 1982, the School of Medicine changed its mission from developing physicians to developing physician-researchers (MD-PhDs) and covertly designated the land on which the physical therapy building was located as the new center of Molecular Genetic Engineering. Subsequently, an all-physician review committee informed us that we didn't belong in the School of Medicine because we didn't have a PhD program and weren't producing "scholars." While meeting with the university president on an early spring evening to plead our case, he informed us that if we were to be considered scholars we should be publishing in the *Journal of Physiology* (his field was physiology) and not *Physical Therapy* (a technical journal by his standards). It was devastating to belatedly realize how the pieces were being put in place to discontinue our program. Our own mission statement, philosophy, and program goals were essentially ignored because they were now incongruent with the new university-sanctioned "direction" of the medical school. The Stanford University Board of Trustees acted to close the program with the graduating class of 1985.¹ The moral of this story is that the philosophy and goals of any physical therapist or physical therapist assistant program must be in concert with the philosophy and goals of the program's institution or the program will not survive.

LEARNING GOALS

After completing this chapter, the reader will be able to:

1. State the core questions that guide curriculum design² and describe the three-phase process of how faculty engage in curriculum development.³
2. Defend the need for a clearly stated program philosophy and goals to guide curriculum planning. Demonstrate how program philosophy and goals can be articulated and integrated with institutional mission, societal needs, and professional expectations and functions.
3. Distinguish the formal from the informal curriculum, applying the concepts of implicit, explicit, null, and hidden curricula to the specific educational setting.
4. Describe the role of curriculum alignment as an organizing strategy for program development.
5. Discuss main trends in health professions education that affect curriculum development and dynamic reform, including perennial challenges (and opportunities) between the curricular needs of health care professional programs and liberal arts education, growing demands for teamwork and interprofessional collaboration, and health professions' role in meeting societal needs.
6. State the purpose of professional accreditation and outline the process of accreditation used by the Commission on Accreditation in Physical Therapy Education (CAPTE).

CURRICULUM DESIGN

Everything depends on the quality of the experience that is had. The quality of any experience has two aspects. There is an immediate aspect of agreeableness or disagreeableness, and there is its influence on later experiences. The first is obvious and easy to judge. The effect of an experience is not borne on its face. It sets a problem to the educator. It is the educator's business to arrange for the kind of experiences that, although they do not repel the student, but rather engage the student's activities are, nevertheless, more than immediately enjoyable because they promote having desirable future experiences. Hence, the central

problem of an education based on experience is to select the kind of present experiences that live fruitfully and creatively in subsequent experiences.⁴

For educational experiences to be coherent and enjoyable to the individual student, as well as relevant to the desired performance of the program graduate, an all-embracing framework for educational experiences—a curriculum design—must be in place. *Curriculum design* refers to the content and organization of the curricular elements of philosophy, goals, coursework, clinical experiences, and evaluation processes. There is a rational assumption that what drives the curriculum designed for the education of physical therapists and physical therapist assistants is preparation for practice in the health care arena, which involves the development of knowledge, skills, attitudes, and values that undergird competent physical therapy practice that can meet societal needs.

A curriculum design reflects input, directly or indirectly, from literally thousands of people. People with health care needs, regulatory bodies, such as regional and professional accreditation groups and state board licensing agencies, members of the American Physical Therapy Association (APTA) who establish and act on professional standards,⁵ physical therapy clinicians, faculty and administrators in the college or university in which the program is located, and each generation of students have an impact on curriculum design. A curriculum design must be steadfastly relevant to the current tasks and standards of physical therapy practice and dynamically responsive to rapidly changing practice environments and human health care needs.

DEVELOPING A CURRICULUM

Eliot Eisner noted that the word *curriculum* originally came from the Latin word *currere*, which means “the course to be run.” He states, “This notion implies a track, a set of obstacles or tasks that an individual is to overcome, something that has a beginning and an end, something that one aims at completing.”⁶

TYLER’S FOUR FUNDAMENTAL QUESTIONS

Four fundamental questions identified by Ralph Tyler in 1949 are useful in deciding how to develop a “racecourse.”⁷² These four questions are rediscovered by each generation of faculty seeking to develop a physical therapy curriculum.

1. What educational purposes or goals should the school seek to attain?
2. What educational experiences can be provided that are likely to attain these purposes?
3. How can these educational experiences be effectively organized?
4. How can it be determined whether these purposes or goals are being attained?

These questions and their answers should be interrelated, with each question and answer building on the preceding questions and answers. The easiest, and often first place, for a group of novice faculty to begin, however, is with the second and third questions. Faculty can confidently produce and organize educational experiences based on

their own personal experiences in physical therapy education and practice. However, if curricula are designed in such a way that the answers to questions 2 and 3 are not directly related to question 1, it is like setting sail without plotting a course. That is, despite knowing everything about sailing a ship, sailing with no clear destination may be disastrous. The result of an analogous educational program is haphazard curricular growth, which, at the least, is perplexing to faculty, students, and clinical educators and, at most, can produce graduates who are ill-focused and perplexed about their role in the health care system.

In designing a curriculum, the elements must be logically ordered. This logic can be obtained by thinking about how each level is directly responsive to the levels above and below. As illustrated in the curricular design column in Figure 1–1, the content of a physical therapy educational program (i.e., coursework, learning experiences, and evaluation and assessment processes) is based on meeting program objectives designed to fulfill the program’s goals. The program goals reflect the philosophy of the program and the mission of the institution. Evaluation of the program and assessment of student learning and graduate performance therefore demonstrate the success or lack of success of the program’s ability to build a curriculum that meets its stated goals.

Tyler’s Question 1: Program Philosophy and Goals

Macro Environment

A good strategy for looking at the macro environment is to engage in an environmental scan. This includes a look at trends and issues outside of the discipline of physical therapy as well as other external influences that need to be considered in being responsive and dynamic. Figure 1–2 demonstrates how the philosophy and goals of any physical therapy curriculum are imbedded in a global (macro) environment that includes society, the health care environment, regulatory agencies, the higher education system, the institution in which the program resides, and the knowledge supporting the discipline of physical therapy.

When any component of this macro environment changes, it is necessary to engage in reflective, deliberative discussion and consider potential changes in the physical therapy curriculum. Looking both inside and outside the profession is part of an environmental scan that is important in designing a socially responsive curriculum. Here are some examples to consider. Historical changes outside the profession (e.g., medical discoveries such as the Sabin polio vaccine or the role of the genome) and inside the profession (e.g., the creation of the physical therapist assistant and the continued growth of clinical specialization) and national initiatives (e.g., patient safety or increasing importance of public health) have led to curricular changes.^{7–9} More than 20% of the U.S. population will be older than 65 years in 2030.¹⁰ Advances in technology and care along with pressures for reduced costs have resulted in decreased patient care stays in acute care and rehabilitation hospital settings. Physical therapy direct-access state laws have spawned curricular changes in entry-level and advanced coursework for physical therapists and physical therapist assistants. Other changes

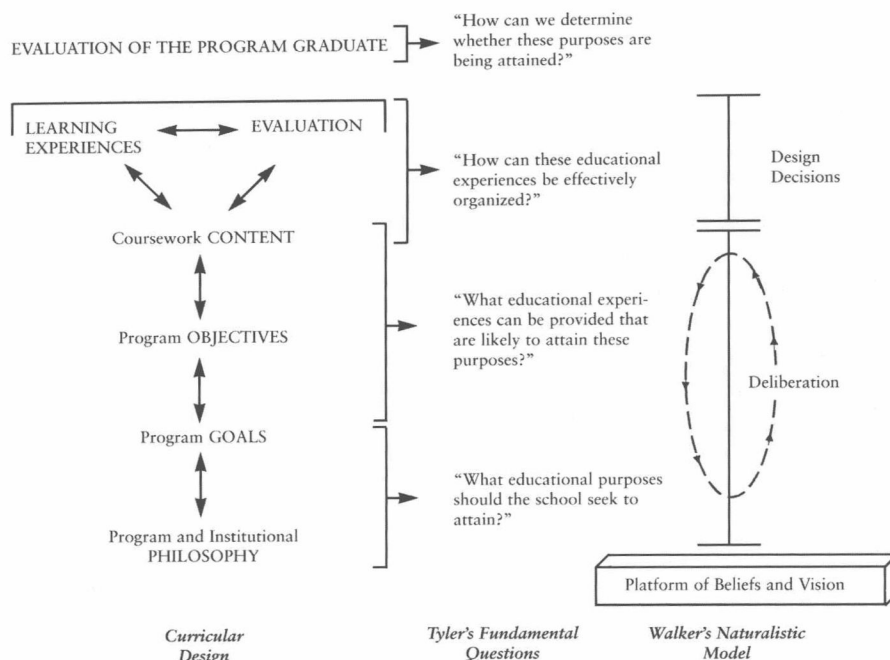


FIGURE 1-1 Relationship between curriculum design, Tyler's fundamental questions, and Walker's naturalistic model.

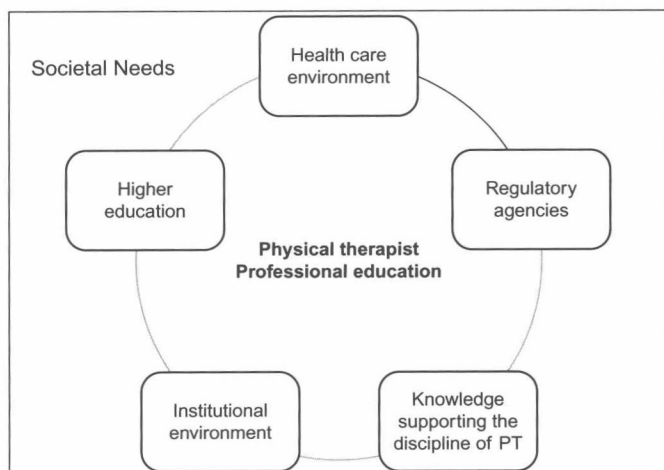


FIGURE 1-2 A view of systems environment within which physical therapy education exists.

include the federal government support of health and health promotion and prevention activities seen in *Healthy People 2020*, which outlines a 10-year agenda for improving the health of the nation.⁷ Social determinants, such as employment, level of education, and living environment, all contribute to health outcomes. There is increased emphasis on preparation of health professionals who are collaboration ready, can work on teams, and understand the need for promoting health in communities as well as with individuals.^{11,12} The focus on health and wellness rather than disease, interprofessional team competencies, and community health are captured in Chapters 7, 12, and 15. There are many sources for performing environmental scans that range from looking at trends in higher

education through the media and other literature to a regular look at health policy changes and new initiatives. The Institute of Medicine issues position papers¹³ and panel documents on critical health issues, which are excellent sources of information.

An example of important work in professional education is the Carnegie Foundation for the Advancement of Teaching's comparative study of five professional fields (law, engineering, the clergy, nursing, and medicine).¹⁴⁻¹⁸ This research was grounded in a shared conceptual framework applicable to all professions that focused on the three major dimensions of professional education: knowledge (habit of mind), both theoretical and practical; practical skills (habit of hand), and professional identity (habit of heart). One of the most critical findings was that, given the lack of public trust in some professions, professional education must be clear about its social contract and engaged in cultivating the life of the mind for the public good (Figure 1-3). What the student is to know (i.e., the language of the discipline and the ways of science) is only part of what people who engage in curriculum design must include. Students must also be prepared to reason, to become sensitive and responsive to cultural diversity and society's needs, to undergird decisions and actions with empathy, and to begin a quest for knowledge that will last throughout their professional lives.¹⁹ Professional education is the portal to professional life and an essential component of laying the groundwork for professional formation.

Health professionals must better organize professional education around what actually happens, as well as what *should* happen, in clinical practice. For example, students must be taught thinking and insight skills, such as reflection-in-action and reflection-on-action, and intellectual humility as well as social responsibility to prepare them for the complex, unique, uncertain, and challenging

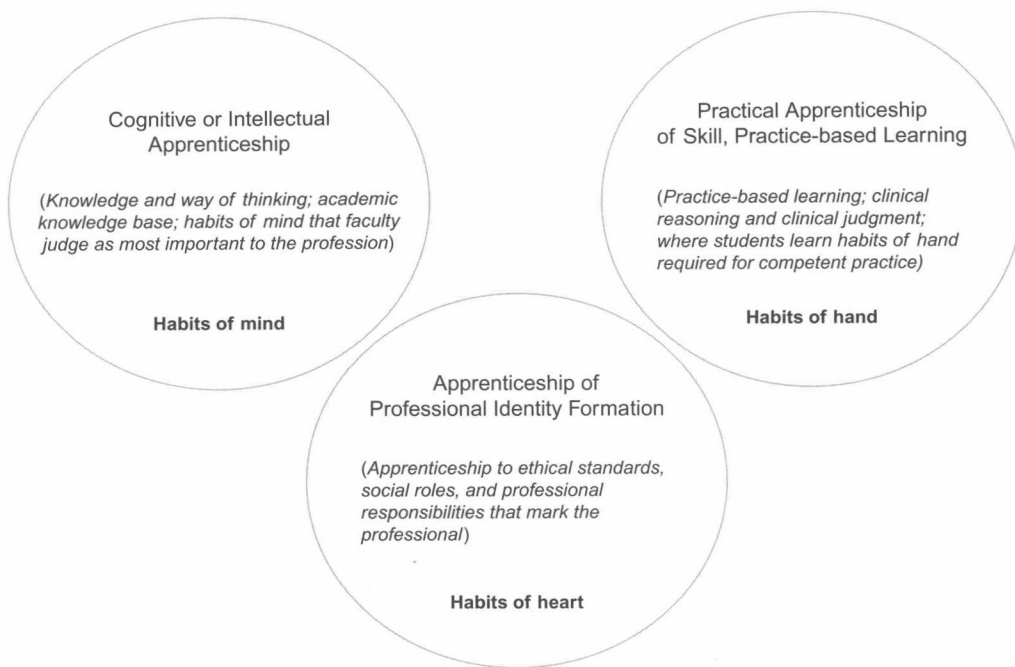


FIGURE 1-3 The conceptual framework used in the Carnegie comparative study of the professions.

health care situations they will face.^{19,20} Students need to be “collaboration ready” to work on interprofessional teams. Clearly, the knowledge, critical thinking and practical reasoning skills, humanistic skills, and professional responsibility and obligations and the ability to take moral action could be incorporated into the goals of any physical therapist or physical therapist assistant program.

Macro Environment: Body of Knowledge Related to Physical Therapy

The APTA monographs, *A Normative Model of Physical Therapist Professional Education: Version 2004*,⁵ which incorporates the document “Professionalism in Physical Therapy; Core Values,” and *A Guide to Physical Therapy Practice*,²¹ continue to provide a grounding structure for physical therapy educators. These monographs help educators define the body of knowledge related to physical therapy. In addition, the APTA vision statement for the profession is another foundational element for curriculum consideration.²²

One of the main functions of the *Normative Model* is to “provide a mechanism for existing, developing, and future professional education programs to evaluate and refine curricula and integrate aspects of the profession’s vision for professional education into their vision.”⁵

The *Normative Model* is based on 23 practice expectations that define the expected entry level performance of a physical therapist. Educators can use this monograph to review how their coursework in Foundational and Clinical Sciences relates to examples of content, terminal behavioral objectives, and related instructional objectives in academic and clinical settings suggested by content experts. Although certainly not exhaustive, the suggestions can be extremely helpful, especially in guiding novice physical therapy instructors as well as those program faculty who are not physical therapists (Box 1-1).

BOX 1-1 Example of Information in the Normative Model of Physical Therapist Professional Education

Primary Content	Examples of Terminal Behavioral Objectives (After the completion of the content, the student will be able to...)	Examples of Instructional Objectives
Adaptations to regular exercise of various types (aerobic or endurance training, interval or anaerobic training, muscle strengthening programs) Exercise specificity Effects on cardiovascular and pulmonary systems, metabolism, blood lipid levels, and skeletal, connective tissue, hormonal systems Hormonal changes with exercise and aging	Describe neural and muscular adaptations that occur as a result of resistance exercise training based on age, gender, and culture.	Describe changes in maximal oxygen consumption, submaximal heart rate and blood pressure, and maximal and submaximal ventilation that occur as a result of endurance exercise training. Describe changes in capillary density, oxidative enzymes, and mitochondria that occur as a result of endurance exercise training. Discuss the effects and side effects of the use of hormones and steroids for improving muscle strength. Differentiate the effects of aging and gender and exercise on hormones, including cortisol, estrogen, testosterone, and insulin.

Data from American Physical Therapy Association Education Division. *A Normative Model of Physical Therapist Professional Education: Version 2004*. Alexandria, VA: American Physical Therapy Association; 2004.