

► COMMENTARY

First, There Was Pedagogy And Then Came Andragogy

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The assertion that first, there was pedagogy and then came andragogy, is simultaneously true and misleading. What is pedagogy? What is andragogy? Which preceded the other? And what, if anything, does any of this have to do with medical education? In this article, we will explore the answers to these questions, review the historical bases for the pedagogical and andragogical paradigms, and discuss learning theories and their relevancy to teaching and learning in medicine.

EMERGENCE OF PEDAGOGY

Pedagogy is derived from two words, *paid* meaning "child" (paediatrics/pediatrics derive from the same stem) and *agogus* meaning "leader of." Thus, it literally means the art and science of teaching children. The roots of pedagogy can be traced back to seventh century Europe during the introduction of organized education at monastic schools which were also known as cathedral schools (Knowles et al., 1998). The primary purpose for the establishment of these institutions was the induction of young men into the priesthood. The model of pedagogy first emerged at this time and was founded on several assumptions about learners. These assumptions were to have a major impact on the design of the educational model.

The first pedagogical assumption was the dependent personality of the learner. This implied that the learner not only did not know but could not know his or her own learning needs. The second assumption on which pedagogy was founded was that learning needed to be subjected-centered. Hence, instructional curricula were organized around subjects, such as arithmetic and geography. A third assumption emphasized extrinsic motivation as the most important driving force for learning. Therefore, learners needed to be motivated with prizes and punishment. The last foundational assumption of pedagogy was that the prior experience of the learner was irrelevant. This is the concept of the blank slate or *tabula rasa*. In this model, the teacher need not consider the student's prior experience as consequential (Knowles et al., 1998).

Later in the eighteenth and nineteenth centuries, as secular and public schools emerged in large numbers, pedagogy was readily adapted because it was the only

existing educational model at the time. Today, many contend that the entire educational system has been frozen in the pedagogical approach, ever since the initial application of pedagogy in the eighteenth century. It should be noted that pedagogy is fundamentally a teacher-centered model, where the teacher determines what will be learned, how it will be learned, when it will be learned, and if it has been learned.

EMERGENCE OF ANDRAGOGY

In 1833, a German grammar school teacher named Alexander Kapp coined the term andragogy (van Enckevort, 1971). Kapp used the word to describe the educational paradigm employed by the Greek philosopher Plato. The terminology never quite caught on until 1926 when Eduard C. Lindeman wrote extensively about andragogy (Gessner, 1956). In describing his theory of adult learning, Lindeman stated that

The approach to adult learning will be via the root of problem solving, not subjects. I am conceiving adult education in terms of a new process by which the adult learns to become aware of and to evaluate his experience. To do this, he cannot begin by studying "subjects" in the hope that this information will be useful. On the contrary, he begins by giving attention to situations in which he finds himself, to problems which include obstacles to his self-fulfillment. Facts and information from the differentiated spheres of knowledge are used, not for the purpose of accumulation, but because of need in solving problems. In this process the teacher finds a new function. He is no longer the oracle who speaks from the platform of authority, but rather the guide, the pointer-out who also participates in learning in proportion to the vitality and relevance of his facts and experiences (Lindeman, 1926).

Beginning in 1959, Malcolm Knowles expanded on the work of Eduard C. Lindeman. Extensive work by Knowles and other educators resulted in the development of new assumptions about adult learners (Cross, 1981; Knowles 1950, 1970, 1972, 1973, 1975, 1977,

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1980, 1984, 1986, 1989, 1990; Knowles et al., 1998; Tough 1967, 1971, 1979, 1982):

I. *The Need to Know.* The first assumption is that adults need to know the utility and value of the material that they are learning before embarking on learning. As an example, Tough (1979) demonstrated that when adults undertake to learn something on their own, they invest considerable energy probing into the benefits they will gain from learning it and the negative consequences of not learning it. Based on his research, Tough argued that in adult learning, the first task of the teacher was to help the learner become aware of the need to know.

II. *The Learners Self-Concept.* The second assumption of andragogy is that the self-concept of the adult learner is self-directing and autonomous (Bower and Hollister 1967; Brunner 1961a, 1961b; Erikson 1950, 1959, 1964; White 1959). Adults have a deep psychological need to be seen by others and treated by others as being capable of self-direction. They resent and resist situations in which they feel that others are imposing their wills on them. However, an educational system that does not nurture this need for autonomy and self-direction is likely to produce adults who assume the role of dependent and passive learners. The assumption of a role of dependency by adult learners creates a conflict within them—between the expectation to be taught as children and the deeper psychological need to be self-directed (Knowles et al., 1998).

III. *The Role of Experience.* A third assumption of adult learning deals with the role of the learner's prior experience. Adult learning practitioners believe that prior experiences are the richest resources available to adult learners. Adults tend to come into adult education activities with a greater volume and higher quality of experience than younger children. Consequently, practitioners of adult learning theory tend to employ experiential techniques, such as simulation exercises, problem solving activities, case methods, laboratory methods, and group discussions.

IV. *Readiness to Learn.* A fourth assumption of andragogy is that of readiness to learn. In adults, readiness to learn is dependent on an appreciation of the relevancy of the topic. Adult learners tend to become ready to learn things that they believe they need to know or be able to do in order to cope effectively with real life situations and problems.

V. *Orientation to Learning.* In contrast with pedagogy, where orientation to learning is subject-centered, adult learning theory is of the view that an adult's orientation to learning is problem-centered, task-centered, or life-centered. Adults are motivated to learn to the extent they perceive that the knowledge will help them perform tasks or solve problems that they may face in real life. Thus, adults learn best when new

knowledge, skills, and attitude are presented in the context of real-life situations.

VI. *Motivation.* A sixth assumption of adult learning addresses the motivation to learn. While adults are responsive to extrinsic motivation, they are most driven by internal pressure, motivation, and the desire for self-esteem and goal attainment. Tough (1967, 1971, 1979, 1982) documented in his studies that all normal adults were motivated to keep learning, growing and developing.

One may conclude that andragogy and pedagogy are opposed to each other, but in fact, these are not necessarily mutually exclusive paradigms. It is true that the assumptions of pedagogy do not acknowledge the principles of andragogy (or adult learning theory), but rather focus on the dependent personality, subject-centeredness, extrinsic motivation, and irrelevant prior experiences. However, it should be noted that andragogy contains an appreciation and acceptance of pedagogy in many instances. For example, adult learning practitioners believe that pedagogy is an appropriate approach in situations where adult learners are truly dependent and have no relevant prior experiences. Thus, an individual who is learning to fly an airplane for the first time and who has no prior aviation experience may be viewed as a dependent learner. In such a circumstance, it is entirely appropriate to employ the pedagogical approach and provide information in a dependent way. However, whereas adherents of pedagogy may sustain this approach indefinitely, practitioners of andragogy would gradually move the learner away from the dependency of pedagogy toward increasing autonomy and self-direction.

So, which came first, pedagogy or andragogy? At first glance, it might seem that the approach to adult learning is a relatively new concept, especially given that pedagogy was formally established in the seventeenth century and the term "andragogy" was only introduced in the nineteenth century. To the contrary, however, all of the great teachers of ancient times were teachers of adults, not children. The great teachers of ancient times all used the process of mental inquiry and believed in active participation of the learner, not passive reception of information. Additionally, they invented and perfected techniques for engaging adult learners. For example, Confucius, Lao Tse of China, the Hebrew Prophets, and Jesus in Biblical times separately invented what is described today as the "case method" (Knowles et al., 1998). In this process, the leader or one of the group members describes a situation (often in the form of a parable) and, together, the group explores its characteristics and possible resolutions. In ancient Greece, Aristotle, Socrates, and Plato invented and practiced the Socratic dialogue, which is quite similar to "problem-based learning" (Knowles et al., 1998). This was a process whereby the facilitator or a partici-

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pant posed a question, dilemma, or problem, and the group pooled its thinking and experience to seek an answer or solution. Likewise in ancient Rome, Cicero, Evidid, and Quintillian invented a confrontational method in which they forced group members to state their theses or positions, and then to defend those positions (Knowles et al., 1998). Thus, it is evident that the great teachers of ancient times all employed principles of adult learning much earlier than the formal development of the model of pedagogy. These great teachers approached adult learning from an apparent understanding that adults had a need and capacity to be self-directing and autonomous. They also understood, perhaps intuitively, that adults had a need to organize learning around problems, not subjects.

Our current understanding of adult learning comes not only from the practices of the great teachers of ancient times but also from groundbreaking work in the social sciences. In clinical psychology, several notable figures have enhanced our understanding of adult learning through their work. Sigmund Freud made a contribution through his work on the influence of the subconscious and Carl Jung (1969) helped advance a more balanced holistic approach while introducing the notion of four ways to extract information from experience (sensation, thought, emotion, and intuition). Erik Erikson (1950, 1959, 1964) described personality development through the "eight stages of man," the last three of which occur during the adult years. Other contributions have come from Abraham Maslow's work on the importance of a safe learning environment (Maslow, 1970, 1972) and Carl Rogers' work on the benefits of using a student-centered approach in the classroom. In addition, several authors in the field of sociology and social psychology have generated a great deal of new knowledge around the behavior of groups, including factors that facilitate or inhibit learning.

Other contributions have come from scholars in the field of adult education, including Cyril O. Houle, who began an in-depth study of adult learning at the University of Chicago in the 1950's (Knowles et al., 1998). Allen Tough (1967, 1971, 1982), based at the Ontario Institute, extended the work of Houle and initiated several studies to gain a deeper understanding about the process of adult learning. He conducted in-depth interviews with adults who were identified as continuing learners. Tough found that adult learning was a ubiquitous endeavor and wrote:

Almost everyone undertakes at least one or two major learning efforts a year, and some individuals undertake as many as 20. It is common for a man or woman to spend 700 hours a year at learning projects. Thus 70% of all learning projects are planned by the learner himself, who seeks help and

support from a variety of acquaintances, experts, and printed resources (1979).

Tough discovered in his studies that adult learners organized their learning efforts around projects or problems. He also found that, in each effort, more than half of the individual's total motivation was to gain and retain certain knowledge and skills or to produce some other lasting change.

LEARNING THEORIES

Learning theories have been described in the education literature and may serve as useful vehicles for understanding some aspects of adult learning. Specifically, an appreciation of learning theories may assist a facilitator or teacher to gain insight into his/her own approach to learning and how this temperament is aligned with one of the various learning theories. The five main learning theories are: behavioral theory, cognitive theory, constructivist theory, humanistic theory and developmental theory. While a full discussion of learning theories is beyond the scope of this manuscript, a brief overview is warranted.

In behavioral theory, the goal of learning is a change in observable behavior. In this paradigm, the instructor writes the learning objectives, provides the stimulus, asks for responses and provides reinforcements to the learners. The instructor directs, manages, and reinforces the learning process. Although this approach seems to be quite at odds with the student-centered aspects of adult learning, behaviorism has been applied in many segments of adult education, particularly, in the area of job and skill training. Many of the self-instructional packages and softwares that are prevalent in professional and occupational development are direct applications of behavioral learning theory.

The goal of learning in cognitive theory is the acquisition of usable knowledge and problem solving know-how. In this approach, the instructor assesses the learners' skills and provides guidance and examples for the learner. The instructor attempts to connect new concepts to old ones and is as concerned with the thought process of the learners as with the right answer. In contrast, the goal of learning in the constructivist learning theory is the acquisition of a shared understanding and the development of the process of knowledge acquisition. The instructor develops the objectives along with the learners and grounds the learning in practical experiences. Usually the instructor would probe for hypotheses to facilitate the learning process.

Developmental theory has as its goal the achievement by each learner of his or her maximum potential. The learning objectives are based on norms and appropriate behavior, skills, or knowledge for specific levels or

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stages of development. The instructor determines the learner's stage and responds appropriately while emphasizing the discovery of principles and maintaining learning growth charts. Developmental theory appears to be quite compatible with the environment of adult learning.

Finally, humanistic learning theory is based on an assumption that there is a natural tendency for people to learn and that adult learning will flourish, if nourishing and encouraging environments are provided. In this paradigm, the goal is to satisfy the learners' need for professional and personal growth. The learners develop the learning objectives and the instructor reacts to the learners' needs and incorporates the learners' experiences into the learning exercise. The instructor often asks the learners to present to each other and serves as a guide during the discussion. There is significant support for this theory in the work that Allen Tough has done on self-directed learning. Overall, humanistic theory strives for flexibility and adaptability as well as individualizing learning to specific learners and to the specific topics.

Each of the learning theories has some application in adult education. For example, humanistic theory lends itself to problem-based learning and self-understanding, whereas behaviorism seems to be more relevant in the teaching of practical, specific skills. Developmental theory has been applied mostly in the areas of professionalism and moral development. Despite apparent discordances among the various learning theories, there are actually several areas of agreement including: the importance of clear goals and objectives; an emphasis on a progression of learning from simple to

more complex and abstract; an insistence that the learner be active in the learning process; and an appreciation for the importance of reinforcement and feedback. The teacher of adults should adapt and apply these theories depending on the specific circumstances and the desired outcomes.

CONCLUSION

In summary, andragogy is premised on several crucial assumptions about the nature and characteristics of adult learners (see Table 1). These assumptions are different from those that form the foundation of pedagogy, which are assumptions about child learners. Adult learning theory contends that as a person matures, his self-concept moves from dependency to self-directedness and autonomy. It maintains that adults accumulate a growing reserve of experiences, which form the richest resource for their learning. It argues that readiness to learn is increasingly oriented toward tasks associated with social roles. Adult learning theory also asserts that an adult's time perspective changes from postponed application of knowledge to immediacy of application and accordingly, orientation to learning shifts from subject-centered to problem-centered. The Table summarizes the principles of adult learning derived from analyses and integration of all the bodies of work in this field.

In this article, we have reviewed the origins of pedagogy and andragogy. The contention that andragogy is a more appropriate educational paradigm to strive for in medical education schools has been implicit in this discussion. They are many instances in medical education where the learners, albeit adults, have no relevant prior experiences and are indeed dependent. In these instances, it is appropriate to begin instruction using the pedagogical design. However, if one accepts the precepts of andragogy, then every effort should be made to move the learners gradually but firmly in the direction of autonomy and self-directedness. It is often said that the physician is a student for life. Practicing physicians tend to continue their learning in a problem-centered, autonomous, and self-directed manner. It would be apt to have medical students begin to learn now in the same manner as they would learn during the rest of their professional lives.

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TABLE 1. A SUMMARY OF PRINCIPLES OF ADULT LEARNING
<p>Adults learn best:</p> <ul style="list-style-type: none"> • When they want or need to learn something • In a non-threatening environment • When their individual learning style needs are met • When their previous experience is valued and utilized • When there are opportunities for them to have control over the learning process • When there is active cognitive and psychomotor participation in the process • When sufficient time is provided for assimilation of new information • When there is an opportunity to practice and apply what they have learned • When there is a focus on relevant problems and practical applications of concepts • When there is feedback to assess progress towards their goals.

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