Bronchoscopy Education
An Experiential Learning Theory Perspective

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KEYWORDS

• Bronchoscopy • Education • Experiential learning theory • Flipped classroom model • Problem-based learning • Checklists • Simulation

KEY POINTS

- The experiential learning theory model addresses various learning styles and should be used for designing continuing medical education programs.
- Problem-based learning improves knowledge retention compared with traditional lectures.
- The flipped classroom model is preferred by students because it enhances active learning.
- Immediate, honest, and objective feedback can be delivered by using checklist and assessment tools.
- Spaced education strategies that improve knowledge gain and retention should be implemented after a live course.

Tell me and I forget. Teach me and I remember. Involve me and I learn.
—Benjamin Franklin

INTRODUCTION

Constantly evolving modern-day health care systems demand that physicians deliver state-of-the-art medicine in a safe and responsible manner. The content, mode of instruction, and styles of learning in the age of mass information have had a direct impact on medical education. Traditional educational strategies, however, have not necessarily translated into meaningful change in learning or physicians' behavior.[1] The traditional one-size-fits-all didactic learning model is fading as more emphasis is placed onto self-directed active learning. The challenge for curriculum developers is to bridge this divide. It is relevant for educators to know how best to design a curriculum whereby knowledge is delivered in an environment that fosters active learning.[1,2] Regarding bronchoscopy education, it is the authors' belief that any valid training program should demonstrate improvements in cognitive and technical knowledge and also lead to positive changes in clinicians' practice. This article describes the rationale and methodology of implementing experiential learning theory into bronchoscopy education programs. The experiential learning theory could be applied globally in bronchoscopy training programs because it addresses various learning styles affected by distinct personality traits and cultural factors.

Disclosure Statement: The authors have nothing to disclose.
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Clin Chest Med 39 (2018) 99–110
https://doi.org/10.1016/j.ccm.2017.11.002

PARADIGM SHIFTS IN MEDICAL EDUCATION

While designing an educational program, it is important to recall that continuing medical education (CME) literature increasingly demonstrates significant differences in the way people learn.[1] The traditional lecture-based instruction model, however, fails to account for these differences. Traditional lectures have minimal active audience participation, and usually educators are inclined to simply review data rather than truly educate. Lectures may thus be perceived as overwhelming and may burden the learners with excessive information. For any type of substantial learning to occur, more interactive teaching methods must be used.

Lecture-based CME programs have proven inadequate for changing physician behaviors.[1] Poor knowledge gain and retention rate after such programs may be a potential explanation.[1] Published evidence suggests that students retain only 20% of transmitted didactic information.[3] There are ongoing questions about the content of medical education, the various methods of instruction, and the connection between different personality styles and teaching. The key to meaningful education is the understanding of how learning occurs in an individual. Incorporating varied learning styles in an educational encounter seems the most desirable way of approaching teaching programs.[1] This method has the potential to influence individual learning as well as the core components of medical education, from individual lectures or hands-on activities to entire courses.[1]

Several learning theories have been proposed but the one that the authors believe is particularly relevant to physicians with various cultural, personality, and training backgrounds is David Kolb's experiential learning model (ELM). This model remains one of the most popular in medical education.[1] David Kolb theorized that the way people perceive and process an experience explains how they learn.[4] The emphasis on experience playing a central role in the learning process differentiates the experiential approach from other learning theories. His model encourages incorporating learning formats that are conducive to most learners.[5] Importantly, learners' preferred styles may differ, but that should not matter because this model's implementation incorporates all learning styles.[1] A truly effective educational model facilitates an individual's ability to harness knowledge by incorporating different learning styles into the curriculum.

According to Kolb, 2 dimensions are necessary for learning to occur. The first dimension is described as perceiving a medium, whereas the second is a transformation, or processing of the medium.[4] Learning results from the way people interact with these dimensions and thereby create their own personal knowledge.[1] In **Fig. 1**, the vertical axis represents perception. At one extreme lies a concrete experience, such as an event or interaction, whereas an abstract conceptualization, such as an idea or theory, represents the other range of the perception spectrum. The horizontal axis represents transformation. Experiences can be transformed into knowledge by reflective observation on the one extreme or active experimentation on the other. These 4 learning styles also correlate with personality characteristics, such as the introverted/extraverted traits

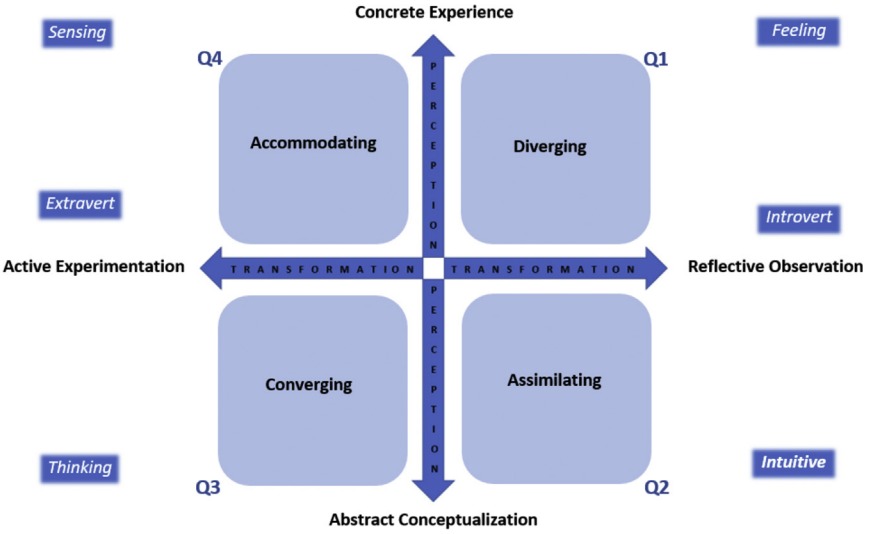

Fig. 1. David Kolb's learning styles. Q, quadrant.