Chapter 3
Education and Training

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ABSTRACT

Education and training has been the cornerstone of medicine from the days of the Hippocratic oath. What began as an informal apprenticeship has become a standardized curriculum, with heavy influence from the education sciences, regulatory bodies and societal demands. As an area of rigorous study in its own right, physicians have a responsibility to understand education theory and their effective application in clinical practice in order to fulfill their professional obligations. This chapter will outline past and current education theory relevant to critical care practice; introduce ideas and suggestions to implement these theories, and present new and emerging paradigms that are set to change graduate medical education in the upcoming decades.

INTRODUCTION

"By my teaching, I will impart knowledge of this art to my own sons, and to my teacher's sons, and to disciples bound by an indenture and oath according to the medical laws…" – Hippocratic Oath

In the mid-1900s, a group of psychologists began to organize the educational process into a framework. Benjamin Bloom (1956) led the efforts by devising a classification for consecutive levels of comprehension and application. He based his taxonomy on three domains: Cognitive (knowledge), Psychomotor (skills) and Affective (attitudes). This system has been revised over the last fifty years to adapt with modernizing education theory (Anderson, Krathwohl, & Bloom, 2001). However, Bloom's core concepts remain clear - Educators should focus on three main objectives of the training process and their clinical application:

- **Knowledge:** What learned information is needed for success?
- **Skills:** What cognitive and psychomotor abilities are needed for success?
- **Attitude:** What defines professionalism in this field?

The word 'doctor' is derived from the Latin word '*docere*', first coined by Cicero meaning 'to teach' (I. Shapiro, 2001). A core responsibility of the physician is to foster the development of the next generation of doctors. Despite this time-honored obligation, formal instruction on education theory and its application in the real world is rarely encountered during post-graduate medical training (MacDougall & Drummond, 2005). A clear understanding of how we learn allows for more effective development of the knowledge, skills, values and behaviors essential to the practice of medicine. The goals of this chapter are threefold: to present an outline of past and current education theory relevant to critical care training, introduce ideas and suggestions to implement these theories into practice, and present new and emerging paradigms that are set to change graduate medical education in the upcoming decades.

KNOWLEDGE

"A genuine higher education for the professions will not be content with reflecting the professionally defined competencies, but will assert alternative modes of reasoning, action and reflection into the curriculum." – Ronald Barnett (1994)

Introduction

The body of modern medical knowledge is broad in scope and ever-changing. This ephemerality poses a particular challenge to educators, who must define what constitutes a suitable foundation for effective clinical practice, while maintaining the flexibility to integrate contemporary developments. The effective delivery of this knowledge requires a keen perception of the learner's needs, awareness of a range of learning styles, and the selection of the most appropriate teaching strategies. With the increasing emphasis on technology in clinical practice, teaching methods have similarly followed suit and are areas of ongoing development. This section aims to discuss the current issues in curriculum design, as well as how education theory may be applied in a practical intensive care-based setting.

Curriculum Design

Curriculum theory is an academic discipline in its own right (Anderson et al., 2001; Flinders & Thornton, 2004). While the definition of curriculum remains a subject of debate, there are four components that are common to most proposed definitions (J. Grant, Abdelrahmen, & Zachariah, 2013):

1. A syllabus defining the knowledge base,
2. A set of endpoints,
3. A process of teaching and learning,
4. The enactment of this knowledge in the real world.

As the blueprint for education within an institution, it is both a powerful manifesto yet fully dependent on its context – balancing the focus between content, process and outcomes, theory and implementation, teacher and student, individual and institution (see Figure 1).

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