

Review

Empowering professional teaching in engineering : sustaining the scholarship of teaching

Heywood J., Morgan&Claypool Publishers, San Rafael, CA, 2018. 246 pp. Type: Book

Date Reviewed: 07/22/19

Each generation has its own idea of how education should look. Teaching is not easy. It assumes that a generally older generation passes selected aspects of mankind's achievements to a younger generation. Is there any universal prescription for obtaining satisfactory results? Most of us will probably agree that, in engineering, this requires some special abilities; that is, we need to join together many theoretical aspects of science with some practical abilities. Moreover, the rapid progress in engineering (faster today than ever) can lead to several paradigm shifts in just one decade. This is clearly visible in information technology (IT). Other domains have similar instances; for example, breakthroughs in the history of mankind have caused important changes in education systems. If students spend around 20-25 years in different schools at different levels of education, how we can show them every aspect of engineering? Maybe that's why lifelong learning has become a possible answer. Also note that an educator's career can span over 40 years.

Empowering professional teaching in engineering is an interesting approach: the author makes an effort to show what should be done to improve teaching. Heywood is an experienced scientist, who also has his own thoughts about teaching and different school systems. He tries to share with us not only some general remarks, but also his own views, opinions, and thoughts about teaching engineering, based on many important events in history.

The book consists of 16 lectures--which the author calls "journeys"--based on a 2016 ASEE/IEEE Frontiers in Education workshop organized by Professor Arnold Pears of Uppsala University. Cooperation with Dr. Mani Mina led to a course on teaching and learning in the Department of Electrical and Computer Engineering and Industrial Design at Iowa State University.

Journeys 1 through 3 are on teacher accountability, with journeys 2 and 3 focused on effectiveness. Journeys 4 through 6 highlight the importance of assessment in learning. Journeys 7 and 8 refer to the scholar academic ideology with inquiry-based learning (journey 7) and the spiral curriculum (journey 8). Journey 9 presents the advanced organizer methodology according to Ausubel's approach. Journeys 10 and 11 discuss the role of concept learning and teaching complex and fuzzy concepts. Journey 12 is on the learner-centered ideology, where the student is a self-activated maker. Journeys 13 through 15 deal with the concept of intelligence: intelligence testing (journey 13); the nature versus nurture controversy (journey 14); and testing and alternative views on intelligence (journey 15). Journey 16 covers social reconstruction ideology.

The construction of each journey is very similar: an introduction that shows necessary preliminaries or references to literature; discussion about the considered topic; examples and exercises; and notes with references. Presented examples, references, and literature reviews reveal the author's deep reflections about the issues.

If you are a teacher and you are looking for a comprehensive survey that can help you to improve your skills, to deepen your knowledge about teaching skills and possible approaches, to help change your approaches, or to confirm your beliefs, please read this book. Moreover, if you instruct other teachers, please also take a look.

Reviewer: Dominik Strzalka

Review #: CR146627 (1910-0363)