

## Review of Morel and Spector’s (2022) book “*Foundations of Educational Technology: Integrative Approaches and Interdisciplinary Perspectives*” Taylor & Francis

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**Abstract**—The paper aims to review an important aspect of technology integration in education. The *Foundations of Educational Technology: Integrative Approaches and Interdisciplinary Perspectives* present various aspects of the foundation of technology in education.

**Keywords**—foundation of technology, education, perspectives

Technology has gained importance in recent years. The outset of COVID-19 has increased the essential role of technology in various aspects of life. In the previous 30 years, technology has played a key part in the provision of education, but never so fast or drastically as in reaction to COVID-19 [1]. One vital role of technology is assisting teachers, students, and institutions to enhance the quality of education. [1, 2] suggest that educational technology has aided teachers and learners theoretically and pedagogically. Being a teacher and researcher when I saw this book I thought to discover what authors shared about technology in education.

Foundation of Education Technology is comprised of a preface and 20 chapters in four distant parts. In the preface, [3] asserted that this is not meant to be a comprehensive guide to using technology in the classroom. It’s meant to serve as a textbook for people just entering the field of educational technology and instructional design, providing an introduction to the various facets of complexity that these professionals face every day. The authors made their intention clear in the preface: “the intent is to blend theory and practice based on the notion that well-informed practitioners and well-grounded researchers are the kinds of people who contribute the most to the advancement of the broadly defined enterprise of educational technology (p.ix)”.

The authors begin the first chapter with a motivational quotation from Maria Montessori; “Through machinery, man can exert tremendous powers almost as fantastic as if he were the hero of a fairy tale. Through machinery, man can travel with an ever-increasing velocity; he can fly through the air and go beneath the surface of the ocean”. The first chapter aims to define educational technology. The authors separated both education and technology to make a clear sense of technology and education.

Authors associated educational technology with a slide rule. Before defining educational technology authors have illustrated educational technology with three different figures on pages 9 and 10. The hierarchy elements that support learning are also illustrated through a diagram on page 11. The authors have also illustrated their attention to smart technology by focusing on the view of [4] as smart technologies, like any other technology, have other qualities such as security and confidentiality that should be considered when creating educational environments, particularly as the intricacy of a communications infrastructure rises. The last part of the chapter shed light on the important questions that challenge the integration of educational technology platforms.

Chapter 2 of the book draws upon the values, foundations, and framework of educational technology. The authors describe values by asking a question; “Given that technology changes and that what people do and can do change, how are we to maintain a solid foundation and maintain our values?” (p.17). Within the framework of values regarding educational technology, the authors also included skepticistoto integrate technology into education. Then with the help of the figure on page 18 authors highlighted the role that values play in the framework for educational technology and acts as a bridge to the concept of foundations. In the next part of the chapter, the authors explained the foundations of the technology. They have presented the foundation pillars of the technology. After this, the levels of planning and its concerns were illustrated. The last part of the chapter shed light on the alternative metaphor of foundations. Chapter 3 describes learning and performing by drawing upon learning as an important foundation of technology. The second part of chapter 3 discusses the performance and its various aspects. Using HI and Dreyfus [5] model the authors illustrated the level of expertise.

In chapter 4, Teaching and Training are discussed separately. The first part of the chapter explains the instruction and teaching. The second part discusses the training and its parts including andragogy and complex cognitive skills. The authors close the chapter with self-understanding questions and learning activities. Chapter five focuses on Technology Support for Learning, Instruction, and Performance. The chapter begins with the technical support for learning and instructions. The authors truly illustrated that as technology changes with the passage of time, people also change. Support of learning-related activities is presented in table 5.1 with individual roles and representative activities (p.52). In table 5.2 (p.53) instructional activities and representative technologies are described. The next section of the chapter describes the various level of support approaches. Further, this chapter states briefly the pedagogical, technological, and content knowledge. The last part of the chapter learning analytics and suggested a short list of analytical tools (p.59). This chapter makes an effort to examine the context of the overall task of the technology support for extensive information and practice for the support of authors referred to the work of [6] and [7].

The last chapter of part 1 of the book describes the interrogative approaches to planning and implementation. Chapter 6 begins with the illustration of the nature of technology integration. After this authors illustrated the importance of systematic perspectives of effective technology integration in education.

The part II of the book focuses on theory with examples of applications. This part of the book consists of four chapters. Chapter 7 builds on the nature of human development. The authors initiated human development with cognitive development.

Piaget's cognitive development theory with its stages is described and illustrated in the figure (p.72). The next section of the chapter emphasizes Vygotsky's cognitive theory of social-mediated theory. This is followed by Erikson's psychosocial development theory. The eight stages of Erikson's psychosocial theory are explained in table 7.1 (p.75). In the middle section of the chapter, the authors account for emotional development and emotional change. The last part of the chapter delineates brain development and neuroscience.

Chapter 8 outlines the theories related to learning and performance. At the onset of the chapter authors map out Constitutes a Theory. The conceptualization of scientific theory is illustrated in figure 8.1 (p.83). Throughout the chapter draws on various theories including behaviorism, cognitivism, constructivism, social theory, humanism, a theory of learning, Skinner's operant condition theory, Bandura's social learning theory, Lave's situated learning theory, experiential learning, Sweller's cognitive load theory, and a theory of change.

In chapter 9 the authors concentrate on theories associated with information and communication. Initially, the authors elaborated on the information through a well-knitted figure (p.94), then information theory is described. The next section of the chapter depicts communication and communicated related theories. In the middle section of the chapter, the authors describe communication models including journalistic models and constructionist models. This is followed by the illustration of the perspectives and criteria for communication theories and models. The authors describe the communicative model, perspectives model, and use in table 7.1 (p.98). The last part of the chapter discusses the implication of educational technology.

The last chapter of part II concentrates on instruction theories and instructional design theories. In the beginning of chapter 10, the authors shed light on the concept of instruction. Then instruction theories are briefly described in the next section of the chapter. The authors illustrated instruction theories with three map models by presenting map examples in figure 10.1 (p.108), a representative concept map of fish in figure 10.2 (p.108), and a representation of instructional flow in figure 10.3 (p.109). In the next section, the authors draw on instructional design theories. The authors illustrate the component of perspective theory and learning theory in figure 10.4 (p.112). The next part of the chapter focuses on the types of learning. The types of learning and possible strategies are explained in figure 10.5 (p.114). After this, the authors described the types of learners and types of learning settings. The chapter further focuses on types of learning methods/models. The authors presented Gagne's events of the learning process and instruction in table 10.1 (p.118). Moreover, the six broad instructional methods related to cognitive apprenticeship are discussed. The next part of the chapter explains the four components of the instructional design model. The four fundamental parts of complex learning those are related to the steps that go along with them are presented in Table 10.2 (p.120). Moving further to this chapter the authors mentioned instructional objects. The last part of the chapter sheds light on smart learning environments.

Part III of the book focuses on practical perspectives with example applications. This part of the book consists of five chapters, chapters eleven to fifteen. Part III of the book mainly focuses on practical perspectives with example applications. Chapter 11 discusses the planning of innovative technology which is an important aspect of the foundation of technology. After discussing the background of the planning, the authors

describe the needs of technology. Then, it is followed another vital aspect of technology that is technology readiness. [8] technology acceptance model is also presented in figure 11.2 (p.134). In addition to panning authors also highlight privacy and information security concerns. In the last part of the chapter, technology deployment and management of change are partly addressed.

Chapter twelve emphasizes on teaching with technology. The authors started the chapter with special attention to situations like COVID-19. The next part of the chapter technology implications. The notion of technology framework affordances for designers and students is presented in table 12.1 (p.145). Further, the implications for the teachers, students, and educational culture are discussed in separate headings. Nine tenets of [9] are also highlighted in the last part of the chapter. In chapter thirteen the authors concentrate on educational technologies in the workplace. The first part of the chapter describes 21st-century technological skills. The overview of 21st-century skills is elaborated in table 13.1 (p.156). Moreover, the chapter also contains the five domains of learning advanced technology in table 13.2 (p.157). The last part of the chapter illustrates education and training in the workplace.

The focus of chapter fourteen is on designing technology-supported learning environments. The authors elaborated on design in detail in the background of the chapter. The first part of the chapter focuses on the designed educational entities. Table 14.1 (p.166) lists a few typical reasons for apprehension in relation to the different designed entities. After this, the authors focus on design principles. Examples from previous research and experience are described to illustrate the types of situations that can go horribly wrong in designing instructional tools and environments. The last section of part III elaborates on the integration of technologies into activities and tasks. Technology integration cases are described in the first part of chapter fifteen. After this technology integrated concerns are listed in table 15.1 (p.179). Technology integration principles are also listed in the last part of the chapter.

The last part of the book concentrates on broadening the context. Chapter sixteen highlight the educational technology principles and examples in different contexts. In the beginning of the chapter, authors discuss the K-12 Education. Communication and interaction, environment and culture, instruction and learning, and examples of K-12 Education are partially discussed. The next two sections of the chapter highlight communication and interaction, environment and culture, instruction and learning, and examples of higher education. After this, the focus is on industry and business and the last part of the chapter describes communication and interaction, environment and culture, instruction and learning, and examples from the perspective of government.

Chapter seventeen describes professional development and training. The first part of the chapter elaborates on the leading programs for development and training. Table 17.1 (p.202) shows one way to categorize the current graduate programs in educational technology offered worldwide. The last two sections of the chapter depict pragmatic changes and professional changes. The focus of chapter eighteen is on scalability and replication studies. The first part of the chapter aims at defining scale, issues related to scaling, and solution approaches related to scalability. The second part of the chapter briefly describes the replication studies.

Chapter nineteen focuses on some promising emerging technologies. The authors first emphasize the identification of emerging technologies. After that, a background of

emerging technologies is illustrated. The authors also briefly described some selected emerging technologies including; personalized learning, Massive open online courses (MOOCs), serious games, wearable devices, bring your device, internet of things, adaptive learning, robotics, artificial intelligence, micro-credential badging, mobile learning, makerspaces, and mixed realities. At the end of the chapter authors concisely elaborate on potential and pitfalls. The last chapter shed light on an important part of the foundation of educational technology. The authors concentrate on lessons learned. The first part of the chapter describes preparation and support for educational technology. The focus of the next part is improving access to technology. The last part of the chapter discusses the issue of learning with disabilities.

As an academic, I appreciate the book because the narrative of the book is one of the focus recent and essential aspects of education and learning. Transforming learning to online settings posed difficulties for many students, as the COVID-19 crisis emerge. So there is a dire need of focusing on teaching and instruction using emerging technologies. Having read [3] “*Foundations of Educational Technology: Integrative Approaches and Interdisciplinary Perspectives*”, I appreciate the way this book has describe the foundation of educational technology. This book is valuable for students, teachers, and institutions to integrate technology in various disciplines. Moreover, this book can serve as a course book for graduate-level students. This book is not only enjoyable to read, but it also has value, and as a result, it belongs to the library of every college or institution that offers a course in education.

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