Preface

As teacher educators, classroom teachers, and students continue to navigate the ever-changing technology landscape, it is critically important to examine how digital tools and applications will impact the next generation of teacher education and classroom teaching. Educational professionals at all levels must continue to learn about digital tools and applications and how each impacts the teaching and learning experience. Encompassed in that learning is the need for thoughtful and meaningful assessment of digital tools and applications readily available to classroom teachers and students. Sorting through the digital possibilities, choosing the correct tool or application, and successfully implementing its use in the classroom is a timely and in many cases costly endeavor. Teacher educators as well as classroom teachers must put forth much sustained effort into this process, as the ever changing technology landscape around them will continue to advance and become increasingly complicated.

With this backdrop in mind, this book aims to highlight the experiences of teacher educators, classroom teachers, and students as each learns to navigate the ever changing educational technology landscape. The roles that teacher educators and classroom teachers play in the successful implementation of technology as well as the positive and negative consequences of various technologies are explored through several lenses and chapters in the book. The various chapters also aim to capture what has been learned up to this point in the digital explosion that has infiltrated classrooms. Educators at all levels wrestle with the balance between staying current with the newest digital tools and applications and using technology in a meaningful manner to enhance the learning experience for all students. This book will serve as a resource for educational professionals as they navigate this challenging and ever-changing technology landscape. Digital tools, applications, learning styles, and the role state and national standards play in the implementation of these technologies are explored in dedicated chapters. The goal of the book is to provide a wide range of information to most educational professionals interested in staying current with the issues and challenges associated with applying the latest technologies in the classroom.

SECTION 1

Section 1, “Acceptance, Access, and Inclusivity,” explores the impact of technology on classrooms through the lenses of technology acceptance; barriers to technology integration; and inclusive pedagogical practices. In Chapter 1, Ackerman examines information and computer technology (ICT) through a technology acceptance framework. Ackerman outlines three strategies that support ICT acceptance in schools. In Chapter 2, Wilson explores, through a sociocultural lens, teachers’ attitudes and beliefs about technology and learning. Wilson then highlights the barriers to technology integration in school-based
learning environments and how such barriers reproduce digital education inequities in US schools. In Chapter 3, Cressey outlines Universal Design for Learning (UDL), a framework for curriculum and instructional planning and how teacher educators can assist preservice teachers in using UDL to develop inclusive pedagogical methods. Cressey further examines how UDL and educational technology can be used to make curricular materials accessible to all students.

SECTION 2

Section 2, “Technology and Teacher Preparation,” focuses on the preparation of new teachers and examines ways to support their use of technology to enhance the learning environment for all students. In Chapter 4, Bailey presents an overview of three major learning theories: behaviorism, cognitivism and constructivism and describes how these theories can inform preservice teachers about the use of digital tools and technologies to support instruction, aid in classroom management and assessment, and assist students with special needs. In Chapter 5, Giovannini, discusses preservice teacher licensing programs with pertinent recommendations for implementing educational technology into preservice teacher preparation programs. In Chapter 6, Obel-Omia advocates that future teachers define literacy more broadly to include digital literacy into their reading and writing schema. To assist preservice teachers in broadening their current conception of literacy, Obel-Omia offers four digital practices that foster preservice teachers’ ability to participate in and reflect upon digital technology as a means to enhance the teaching and learning experience for both teachers and students alike. In Chapter 7, Eyyam provides an international perspective with a study examining the relationship between learning styles and technology enhanced classrooms in North Cyprus. Lastly, in Chapter 8, researchers Dreon, Shuttle, and Bower examine how embedding problem based learning (PBL) into technology education helps preservice teachers develop technological pedagogical content knowledge (TPACK). Results of their research indicate that integrating PBL into an educational technology course significantly impacts preservice teachers’ TPACK.

SECTION 3

Section 3, “The Changing Role of Digital Tools,” provides a forum of chapters detailing how digital tools and applications are changing the face of education. The first chapter examines the role of 3D printers in the classroom, the next describes how Twitter can provide students with choice and voice in the classroom, another explores the impact of online classrooms in the K-12 setting, while the final chapter examines the cultural shift required for understanding and participating in a Massive Open Online Course (MOOC).

In Chapter 9, Trust, Maloy, and Kommers posit that the innovative technology of 3-D printing has the potential to transform the entire teaching and learning process. They point out, however, that a set of “best practices” with regard to 3-D printing has not yet been defined. The authors’ action research project suggests that there are multiple ways to support new and innovative teaching practices with the exciting possibilities that 3-D printers have to supplement study for both teachers and students. In Chapter 10, Noble, McQuillan, Wangia, and Soules, focus their research on student-centered teaching practices using digital tools and applications. The authors highlight several case studies in which Twitter can be harnessed to connect student voice and choice with teacher lead curricular goals. Jones, in Chapter 11,
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outlines online course terminology, highlights the evolution of online learning in K-12 education, and provides an overview of the characteristics of online delivery tools. In Chapter 12, Monge-Lopez and Gomez-Hernandez present research that details how preservice teachers’ lack of knowledge regarding Massive Open Online Courses (MOOCs) limits their ability to tap into MOOCs as a supplementary educational resource for professional development.

SECTION 4

Section 4, “Digital Literacy and the Changing Role of the Library,” contains two chapters examining the connections between classroom teachers, librarians, and 21st century digital tools and applications. In Chapter 13, Friesem, Jennings, and Prest describe a two-year study of the successful integration of digital and media literacy practices. In Chapter 14, Paynter examines how a classroom teacher and a school library media specialist collaborated to include information technology and literacy in an elementary classroom. Paynter clearly connects the collaborative process to digital literacy and the Common Core State Standards and provides concrete recommendations about how schools can leverage the lessons learned from her study.

To summarize, this book explores multiple aspects of the changing role of digital technology and its impact on education from the prospective of teacher educators, classroom teachers, media and library specialists, and indeed from elementary through college age students. The book explores how that change is affecting schools and schooling in the United States and abroad. The variety and scope of digital technologies is growing and the next generation of teacher educators and classroom teachers must critically engage with advancing technology. The goal is not only to advance the teaching and learning process, but also to enhance this process in a meaningful way for the benefit of both teachers and students.

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