

## Technology Integration

M.J. Bishop and J. Michael Spector

This section of the Handbook focuses on how various technologies are integrated into different practical contexts. One indicator of successful technology integration is that the focus—in the classroom or with the learner—is no longer on the technology itself, but rather on the task at hand. For example, in today’s classroom, no one talks about a piece of chalk and how to use it to mark on a blackboard and teachers do not submit to special in-service workshops on the use of a book, how to turn pages, where to find the index, and the like. When educators and learners have stopped talking about how to point and click, how to search and find, how to drag and drop, how to cut and paste, and so on, then we know that they have integrated those techniques into their routine suite of technology-oriented behaviors.

That being said, it is clear from the chapters in this section that the challenges for effective technology integration in learning, instruction, and performance are quite significant and the research somewhat limited. As Rogers (2003) observed, “getting a new idea adopted, even when it has obvious advantages, is difficult” (p. 1) and often involves a sort of *social change* that alters the very structure and function of a social system. Cuban (2001) agreed and argued further that, consequently, instructional technology integration initiatives often go hand in hand with discussions of educational reform and systemic change—as will be seen in the chapters that follow.

This section is divided roughly into micro- and macro-level views of the question of technology integration. The first two chapters take a micro-level view by focusing on learners’ varying characteristics and levels of readiness that can affect their adoption of technologies for learning. The chapter by Eunjung (Grace) Oh and Thomas C. Reeves, for example, explores recent research on generational dif-

ferences among learners’ attitudes, aptitudes, and interests in technology use. While many have speculated that today’s technologies are critical to meeting younger learners’ learning needs, the authors conclude that there is little tangible research evidence to support this supposition. The authors note further that there is evidence to suggest that *Millennial Generation* students do not generalize their technology use to learning settings. This chapter reviews the recent research in this area and discusses the ramifications of these findings for educational technologists and the future of education.

Rhonda Christensen’s and Gerald Knezek’s chapter synthesizes the existing, albeit scant, literature on assessing learners’ technology readiness and skills. The authors claim that verifying stand-alone technology skills is not sufficient as a means of assessing whether students evaluate and use these tools in an appropriate manner across content areas for use in higher level learning activities. They suggest, instead, that there are likely minimum levels of technology skills that we would expect our students to have before they are able to make informed decisions on which tools they will use. This chapter explores the existing research into emerging assessment techniques as well as prospects for new forms of assessment unique to new digital media.

The remainder of this section comprises chapters that take a larger, more macro-level perspective on the issue of technology integration in a variety of contexts: K-12 schools, medical education, and multicultural settings. In their chapter on technology integration in school settings, Randy Davies and Rick West organize their review of the recent research on three broad areas of focus: increasing access to technology, increasing technology use, and improving the effectiveness of technology use. The authors conclude that the primary benefit to date of technology integration in school settings has been increased access to information and communication. They suggest that further study is needed to provide guidance on how technologies can be used better to facilitate learners’ cognitive processing toward improved learning outcomes.

---

M.J. Bishop, Ed.D. (✉)  
Lehigh University, Bethlehem, PA, USA  
e-mail: mj.bishop@lehigh.edu

J.M. Spector  
University of North Texas, Denton, TX, USA

In the next chapter on medical education settings, Tiffany A. Koszalka, John Epling, and Jennifer Reese-Barnes discuss the extent of technology integration from the perspective of recent calls for medical school reform in the USA. The authors' review of the existing literature reveals that few studies report widely studied technology initiatives or provide sufficient evidence to support technology use as a way to inform curricular reform among medical schools. The authors conclude the chapter by calling for collaborative and interdisciplinary research aligned with medical curriculum enhancement themes.

Lastly in this section, Konrad Morgan reviews international best practice for how technology can be successfully integrated into multicultural settings. Examples provided here include a wide range of technologies and practical implementations at the intersection of multicultural education and instructional design. The author reviews the challenges of supporting multicultural differences in digital

learning systems as well as potential solutions for overcoming those obstacles.

Clearly there are other contexts for instructional technology integration that might have been included here as well, such as work settings or informal learning settings, higher education generally, and other professional school education contexts (such as law). Unfortunately, circumstances and a general lack of research did not make it possible for us to include discussions of those topics in this edition. We will leave it to the editors of the next *Handbook* to consider including research reviews in these areas there.

---

## References

- \* Cuban, L. (2001). *Oversold and underused: Computers in the classroom*. Cambridge, MA: Harvard University Press.
- \* Rogers, E. M. (2003). *Diffusion of innovations* (5th ed.). New York, NY: Free Press.

---

\* An asterisk next to a reference entry throughout this Handbook indicates a reference that the author(s) considers to be central to the topic.