

Preface

Integrating Information & Communications Technologies into the Classroom addresses the multiple perspectives of teaching and learning with technology and promoting research efforts, positions and practices advancing the state-of-the-art application of technology in formal education, corporate training, higher education, professional development and proprietary education. Further, this text focuses on contributions from all disciplines of information, educational and instructional technology.

Volume I offers educational researchers, scholars and practitioners with the most current investigations and best practices surrounding the uses of technology in the classroom. The text is divided into four sections. Section I includes eight chapters that examine business, computer science and information technology (IT) education and topics such as school improvement and reform, standards-based technology education programs, data-driven decision making and strategic technology education planning.

Chapter I, *Using Blended Learning to Develop Tertiary Students' Skills of Critique*, by Paul Lajbcyier and Christine Spratt, explores pedagogical strategies that engage students in ways that will assure development of their skills of critique and analysis. This chapter draws on data from a recent case-based evaluation study to argue that innovative assessment and the development of social presence in online learning environments contribute to developing skills in students. The chapter poses implications for further research in pedagogical practices; in particular, it presents a discussion of the potential of “blended learning” and “variation theory” for leading such research.

Chapter II presents Sherry Chen's research on the *Effects of Human Factors on the Use of Web-Based Instruction*. Chen examines the human factors that influence learner performance and perception in a Web-based instructional environment. Her study presents issues associated with instructional programs applied to instruction that teaches students how to use HTML. The master's degree students who participated produced a number of interesting findings. For example, student task

achievements were affected by their levels of previous system experience, while post-test and gain scores were positively influenced by their perceptions and attitudes toward Web-based instruction. The implications of these and other findings will be of interest to both educators and scholars alike.

Chapter III, *Who's Talking Online II: Revisiting Gender and Online Communication*, by Taralynn Hartsell, investigates the association between gender and online communication. The study of two online graduate courses involved a descriptive model of "student involvement," recording the quantity and quality of student activity in targeted discussion threads. Readers will appreciate how quantity was recorded and quality examined. A difference was reported between the genders in both quantity and quality. Read the chapter to find out which gender excelled in online student participation.

Chapter IV presents a blended approach for delivering an online international master's program and comparing its results to the more traditional classroom format. In *Using a Blended Model to Improve Delivery of Teacher Education Curriculum in Global Settings*, Vivian Wright, Ronnie Stanford and Jon Beedle discuss the challenges, lessons learned and student reflections on the blended approach. A few of their more important contributions include a description of potential problems that must be addressed before online classes begin, including student enrollment and a single university-wide login username and password. Student-provided advantages to this approach are discussed, as students identify personal gains in subject matter content with simultaneous improvements in the additional skills and knowledge required to effectively use Web-based materials and interact with peers and instructors.

Chapter V by Andrew Targowski offers a historical perspective of the *Genesis, Political and Economic Sides of the Internet*. His chapter probes into the importance of the Cold War to the ultimate development and expansion of the Internet. As uncovered in this chapter, the research on the universality of information and communications technology was conducted on both sides of the Iron Curtain, divulging the similarities in thinking that occurred on both sides of the Cold War. The political significance of the Internet results not only from its roots in military command and control but also from its influence on the development of democracy and the ultimate eradication of dictatorships. The history of the Internet is also an example of the development of great engineering talents and research, and development centers and their impact on the emergence of a global civilization. This chapter is mandatory reading for all information technologists and educators.

Chapter VI, *Writing Across the IT/MIS Curriculum*, by Stephanie Etter and Jeff Merhout, substantiates the claim from popular literature that college graduates are entering the workforce without sufficient writing skills, and then moves the reader beyond the platitudes and offers an examination of writing across the curriculum based on the integration of writing into the MIS/IT curriculum. While traditional IT/MIS programs rely heavily on technology-based courses, the authors argue that these technology courses must also promote effective writing habits. It would be hard to reject the growing importance of preparing IT/MIS students to use their writing

skills in their chosen career fields. This chapter illustrates how writing assignments can be used effectively in MIS/IT courses.

Chapter VII, *Learning IT: Where do Lectures Fit?*, revisits the established thinking on the effectiveness of the traditional method of classroom-based content delivery in undergraduate programs. Tanya McGill and Samantha Bax, both from Murdoch University in Australia, explore the factors that influence lecture attendance and student perceptions of the lecture format, while suggesting that students are recognizing the importance of active learning within the constraints of traditional learning settings. Their results suggest that students continue to acknowledge the contributions of the lecture format to their learning experience when coupled with the lecturer's expertise and experience in the content area.

Chapter VIII, *Training Sequences and Their Effects on Task Performance and User Outcomes*, by Anol Bhattacharjee and Clive Sanford, introduces the concept of IT training sequences and examines how sequencing impacts IT task performance, user satisfaction and users' self-efficacy. The authors present four hypotheses contrasting conceptual-procedural and procedural-conceptual training sequences in relation to performance of near-transfer and far-transfer IT tasks, satisfaction and self-efficacy. Read how these hypotheses were tested in a database design context using a quasi-experimental study involving student subjects and review the empirical results and implications for IT training.

Section II focuses on distance learning technology education and the impact of technology on adult learners. Four chapters provide the reader with unique perspectives on online group processes, models for online discussion, the cultural aspects of learning at a distance and collaborative learning in a virtual environment.

Chapter IV, *Group Process and Trust in Group Discussion*, kicks off our examination of distance learning technology education with a look at how successful group discussion is effected in online learning. Lorna Uden and Linda Wojnar share the results of their investigation into the benefits of group discussion for online learning. For group discussion to be effective in an online environment, the authors found it important to consider group process and the role of trust within groups. Matched with their considerable experience as online educators, the chapter combines experience and research to suggest practical implications to consider immediately as well as prudent recommendations for further study.

Chapter X introduces a new model for online discussion by Byron Havard, Jianxia Du and Anthony Olinzock. *Task-Oriented Online Discussion: A Practical Model for Student Learning* is based on three generally recognized learning processes: information, methods and cognition. Three modes of online discussion are prescribed: flexible peer, structured topic and collaborative task discussion, and are paired with tasks that encourage adoptive learning, adaptive learning and deep learning. The associated research examines two semesters of an online graduate-level course that investigated the robustness of the model and the strategies for dynamic task-oriented discussion in an online learning environment.

Chapter XI, *Addressing the Cultural Dimensions of E-Learning – Where to Begin?*, is a thoughtful exposition from Andrea Edmundson on the likely effects of culture on e-learning and e-learning on the lessening of cultural bias. The exploratory study included participants from two diverse cultures, the United States and India, who achieved equitable learning outcomes that the authors suggest results from the mitigation of cultural effects by the e-learning format. Also, cultural dimensions appeared to affect learners' preferences for and perceptions of e-learning while both were willing to try new approaches to learning. Particularly valuable to our readers is the amplification of the results to the cultural adaptation process (CAP) model, now presented as a general guideline for adapting e-learning courses for other cultures.

Chapter XII, *Project-Based Online Group Collaborative Learning Characteristics*, joins the efforts of four institutions; three in the United States and one in the Republic of China. Byron Havard, Jianxia Du, James Adams and Gang Ding present a framework for online group collaborative learning based on Jean Piaget's concepts of assimilation and accommodation and Lev Vygotsky's theory of social interaction. For the cognitive reader, the chapter is replete with ideas of how an online project-based learning approach affects students' cognitive skills development. It explores factors and identifies unique characteristics that lead to successful collaborative classroom projects, including: leadership style and individual role, goal setting and project management, accountability and commitment, peer supportive relationships, individual accomplishment and group accomplishments, and mixed gender and race group preference.

Section III considers communications technologies employed in the classroom and the effects of technology in society, equity issues, technology education and copyright laws, censorship, acceptable use and fair use laws, community education and public outreach using technology.

Chapter XIII, by Tanya McGill and Michael Dixon from Murdoch University in Australia, shares the latest investigation on *Information Technology Certification: A Student Perspective*. The chapter investigates student perceptions of both the benefits and risks of certification, its importance in obtaining employment, the impact on any associated financial benefits and the relationship of certification to 'real-world' experiences. Certification, it was found, has become a popular adjunct to traditional means of acquiring IT skills and employers increasingly specify a preference for those holding certifications.

Chapter XIV is an eloquent investigation into the *Management of Telecommunications Services: A Vital New Content Area and a Course Model for the College of Business*, by Faye Teer and Harold Teer and Young Choi from James Madison University. Their chapter argues for the importance of telecommunications services management as its own university discipline and describes a possible model for one particular undergraduate course, Management of Telecommunications Services. The chapter targets both university faculty and administration and corporate representatives for their inputs of potential course goals and objectives. If you have

ever considered introducing a similar program of study, this chapter will provide a primer on the fundamentals of managing telecommunications services.

Section IV of this text concerns itself with the general topic of teaching and learning with technology. The constituent chapters examine the more specific applications of pedagogy and androgogy with respect to technology as a teaching strategy and learning style, and how technology can be made to work effectively to the benefit of students in the classroom.

Chapter XI, *Mind the Gap! New 'Literacies' Create New Divides*, by Madden, Baptista Nunes, McPherson, Ford and Miller, scrutinizes the rapid spread of ICT and its move from peripheral to integral status in the classroom. This chapter draws on the findings of a number of research projects to explore some of the 'generation gaps' that arise from differing perceptions of learning technologies. It presents an excellent primer for advanced courses in instructional technology along with distinctive insights into how technologies expand generation gaps that existed between and within students, teachers and parents; gaps that this research finds are exacerbated by as little as five years between groups. Results from a related project exploring Networked Information and Communication Literacy Skills (NICLS) are used to introduce a discussion on the nature of required technology skills and how they can be addressed in light of these recognized generation gaps.

Chapter XVI, authored by Nurul I. Sarkar, presents *An Interactive Tool for Teaching and Learning LAN Design*. This chapter is not for the faint of heart, as the author discusses his own creation – a software tool called LAN-Designer that provides an interactive learning experience to teach the technical side of designing local area networks. This chapter is a combination technical guide, textbook and instruction manual, and is required reading for anyone teaching about networking. The chapter describes the software application and measures its effectiveness as a teaching/learning tool. The author shares his investigation of the effectiveness of the package and presents an evaluation by both students and faculty colleagues on student learning and comprehension.

LeAnne Robinson provides Chapter XVII, *Diffusion of Educational Technology and Education Reform: Examining Perceptual Barriers to Technology Integration*. Her study examines educators' perceived barriers to technology integration and their relationship to education reform. Educators and administrators from four elementary schools in Washington State were interviewed during a 3-month period. The schools differed in size, location and social economic status, and reported variances in their state-wide assessment scores. All schools reported similar barriers to using educational technology, while differences were noted among schools who conducted long-range planning for technology and those that had not. Staff, curricula, performance standards and assessment tools were examined.

Chapter XVIII offers several *Perspectives on Twenty-First Century e-Learning in Higher Education*. Lalita Rajasingham explores a new higher education paradigm that considers events surrounding the advance of globalization and the rapid development of the Internet and its impact on the value of knowledge. The chapter

makes an excellent primer for courses introducing structures, strategies, procedures and programs that deal with the processes of technology in general and globalization in particular. The international research presented in this chapter investigates a paradigm for re-constructing higher education in light of technological advances and as a potential platform to reframe future developments.

Chapter XIX examines the motivations of K-12 educators who participated in online professional development modules. *Guiding Our Way: Needs and Motivations of Teachers in Online Learning Modeling Responsive Course Design*, by King, Melia and Dunham, isolated four common themes pertaining to online teacher professional development. The themes reviewed include learner expectations, learner support and access, incentives and content. The study employed surveys and focus groups to identify critical factors in instructional design and implementation, and its large sample size (944 participants) makes the conclusions and recommendations appropriate for generalization across the gamut of teacher professional development. They will be of particular interest to readers with such responsibilities.

Chapter XX, the final offering in this first volume on Integrating ICT into the Classroom, is provided by Leping Liu. *Quality of Online Learning Applications: Impact on Student Enjoyment, Motivation, and Anxiety* explores the influence of quality-designed online learning applications on student enjoyment, motivation and anxiety level. As with the previous chapter, a considerable participant base (900 online K-12 applications) was evaluated to lay a foundation for generalizing the results across a wide population. Four design factors were examined: quality of information, design of information, quality of technology use and design of technology use, in relation to the three learning-related variables. Three prediction models were tested in this study that found an intermediate effect between the design of online application and resultant student learning. If you are a schoolteacher, designer or professional who uses online applications for education purposes, this is a must-read chapter.

This book provides a wealth of research, practice and thought-provoking stances on many key issues associated with teaching and learning in today's classroom environment. Teachers, educational researchers and scholars are well-advised to consider the practical applications of the many findings and recommendations contained in this text. These 20 chapters cover a wide range of instructional technology topics in specific educational areas of business, computer science and information systems; distance learning; and communications education, as well as the more general area of teaching and learning with technology.

Provocative topics are presented for review. They include topics such as the effects of human factors on Web-based instruction; the impact of gender, politics, culture and economics on instructional technology; the effects of technology on socialization and group processes; and the barriers, challenges and successes of technology integration in the classroom. The contributors to this first volume are justifiably proud of the scholarship that went into this text. They would be most pleased to know that the text has become a valuable tool in classrooms, training rooms and workshops.