Preface

The changing nature of our society and organizations, being more and more knowledge-based (Holsapple & Joshi, 2002), has a major impact on how individual and organizational learning is—and will be—delivered or experienced. This edited book, *Web-Based and Blended Educational Tools and Innovations*, includes fourteen chapters that elaborate many interesting issues in this evolving context. With some amount of overlap, these chapters cover three main themes, which are reflected in the book’s three sections, namely:

- Design and Modeling Issues
- Pedagogy, Learning, and Technology
- Technology and Tools

The first section of this volume is titled “Design and Modeling Issues.” The use of Information and Communication Technologies (ICT) and tools in education is subsumed within the next two themes in this book, but this section focuses on its application and implications for theory and practice. Driven by technological advances, improved communications, economic liberalization, and increased international competition, globalization has brought in an era of educational, economic, institutional, and cultural integration. Over the last decade, the technology choices and issues facing higher learning have changed dramatically, and so have the learning styles and preferences of the learners, given a wide array of learning and technology choices. Learning via interactive, virtual Web-based communities and environments is gaining popularity every day as the number of Web-supported or Web-based courses in training, colleges, and K-12 has and continues to increase significantly (Allen & Seman, 2004, 2008; Picciano, 2001; Setzer & Lewis, 2005). By adapting the courses to the prior knowledge of the learners helps them in learning and making learning easier for them. On one hand, where technology initiatives support learning, it can be challenging as well. Web-based environments can have multiple environmental and learner-instructor based challenges. Some of them may be the actions of inexperienced instructors or designers who fail to provide individualized feedback, apply appropriate instructional strategies, create sufficient interaction, develop high quality content, build a learning community with social integration, and /or fail to monitor student progress (Schrum & Benson, 2001; Song, Singleton, Hill, & Koh, 2004; Terry, 2001; Vonderwell, 2003; Zheng & Smaldino, 2003). Similarly, learners may be ill prepared for Web-based learning and technology challenges. Section 1 includes four chapters:

Chapter 1, “An Exploration of the Social Web Environment for Collaborative Software Engineering Education,” by Pankaj Kamthan (Concordia University, Canada), explores the technological environment in which Software Engineering Education (SEE) resides, thrives, and continues to evolve. In this
chapter, SW4CSE2, a methodology for collaborations in SEE based on the Social Web environment, is proposed. The impact of integrating Social Web technologies, and applications based on these technologies, in collaborative activities that commonly occur in the context of SEE are explored. More specifically, the teacher-student and student-student collaborations, both inside and outside the classroom, are highlighted. In doing so, the feasibility issues in selection and adoption of technologies/applications are emphasized, and the use of pedagogically inclined patterns is made. The potential prospects of such an integration, and related concerns, are illustrated by practical examples.

Chapter 2, “Leadership, Collective Efficacy, and Team Performance: A New Paradigm for the Next Generation,” by Shalonda K. Bradford (Savannah State University, USA), examines the effect of leader attributes on the collective efficacy of a group of members of Generation Next, and the interrelation of leadership and collective efficacy on the team’s performance. A case study approach was implemented by 3 teams of business students participating in a national business competition between the years 2009-2011. Results indicate transformational leadership qualities inspire greater levels of collective efficacy. Moreover, teams demonstrating higher collective efficacy also performed better in the competition, suggesting a positive relationship between collective efficacy and team performance. Implications of these findings are discussed, and a scope for future research is offered.

Chapter 3, “Supporting Mobile Learners: An Action Research Project,” by Maurício Gregianin Testa (Pontifical Catholic University of Rio Grande do Sul [PUCRS], Brazil) and Edimara Mezzomo Luciano (Pontifical Catholic University of Rio Grande do Sul [PUCRS], Brazil), focuses on Mobile Learning (mLearning) that is a form of technology supported learning that may meet the needs of learners who frequently change their physical location (‘mobile learners’). Ubiquitous mobile data technologies like SMS (Short Text Messaging Service) allow designing learning and communications services that support student-centered teaching and learning. This chapter presents the results of an Action Research (AR) project in which an SMS-based mLearning service was integrated with classroom teaching in the context of international students studying English before enrolling in regular academic courses with English as the language of instruction. The findings of the two AR cycles suggest that the mLearning approach has added flexibility to the course design and has motivated students to improve academically. The concept and the methodology can be extended to other contexts.

Chapter 4, “Exploring the Influence of Affiliation Motivation in the Effectiveness of Web-Based Courses,” by Maurício Gregianin Testa (Pontifical Catholic University of Rio Grande do Sul [PUCRS], Brazil), and Edimara Mezzomo Luciano (Pontifical Catholic University of Rio Grande do Sul [PUCRS], Brazil), focuses on students that are considered the central element of any learning process. This chapter examines one specific characteristic of students in Web-based courses: their affiliation motivation. The objective is to explore the influence of affiliation motivation on students in the effectiveness of Web-based courses. The authors conducted a case study of a Brazilian Web-based course. Six different data collection strategies were used: open and semi-structured interviews, direct observations, record and document analyses, and a structured survey. The results show the significant influence of three main constructs related to affiliation motivation (attention, positive stimulation, and emotional support) in four dimensions related to students: (1) their satisfaction, (2) their perceptions of course results and quality, (3) their perceptions of the effectiveness of Web-based courses compared with that of on-site courses, and (4) their perceptions regarding the advantages and disadvantages of Web-based courses.

The second section of this volume is titled “Pedagogy, Learning, and Technology.” There are five chapters in this section. Arora, Lesiene, and Raisinghani’s chapter explores the linkages between learning and teaching styles and media. Using information technology as the learning medium enables learners
to learn at their own pace and in their own time through interaction with digital materials or through interaction among people (Lee & Woods, 2010; Wong, Kamarish, & Tang, 2006). However, online activities should be authentic and useful (Herrington & Oliver, 2000; Paige, Lloyda, & Chartres, 2008) and contain enough elements for every team member. Ng’s chapter compares face-to-face with online activities between two classes, while Tsai, Shen, and Lee’s chapter integrates two learning approaches into students’ project work. The newer technology, Web 2.0, not only provides a huge and untapped resource for educators (Barlow, 2008) but also enable learners to become active producers of knowledge by creating, mixing, and amending contents (Anderson, 2007; McLoughlin & Lee, 2008). DiBello and Missildine’s chapter found that Second Life provided participants with high levels of engagement with authentic exercises. Another advantage of using Web 2.0 is its transparency so that learners can learn from each other, and the tracked functions also help educators to manage and monitor learners’ activities (Lai & Ng, 2011; Ng & Lai, 2012). However, students hardly used the “modify” option to modify the given answers to the questions in Scalise’s chapter. Therefore, there is also a need to align with the intended learning outcomes, student learning activities, and assessment tasks (Biggs, 2003).

Chapter 5, “Learning and Teaching Styles for Teaching Effectiveness: An Empirical Analysis,” by Anshu Saxena Arora (Savannah State University, USA), Reginald Leseane (Savannah State University, USA), and Mahesh S. Raisinghani (Texas Woman’s University, USA). The research study used the Felder-Solomon Index of Learning Styles and Center for Occupational Research and Development’s teaching style inventories to match and expand the learning and teaching styles interpretation from the learners’ perspective. 161 undergraduate students participated in the study. It was found that there were strong relationships amongst learning and teaching styles, teaching effectiveness, and overall grade point average, but there was no strong relationship of learning styles on teaching effectiveness even though there existed a strong relationship of teaching styles on teaching effectiveness. This research provides practical implications for educators to re-think about how their students learn and what would be the best instructional method.

Chapter 6, “An Exploratory Study of Blended Learning Activities in Two Classes,” by Eugenia M. W. Ng (The Hong Kong Institute of Education, Hong Kong), examines preferences of face-to-face and online activities with two classes. The undergraduate classes participated in an online discussion, an online debate, and two face-to-face debates with each other. Data was gathered for triangulated analysis from a questionnaire that solicited participants’ opinions from focus group meetings and from tracked statistics provided by the learning platform. The responses to the questionnaire and the opinions expressed in the focus group meetings showed that they preferred a face-to-face approach to an online learning approach. The tracked statistics showed that the participants often read online postings but not many of them expressed their opinions online. Despite the common belief that students enjoy online activities during leisure, students embraced the opportunity to interact with another class when preparing and participating face-to-face debate. The results shed some light on what kind of activities should be conducted face-to-face or online.

Chapter 7, “The Effects of Combined Training of Web-Based Problem-Based Learning and Self-Regulated Learning,” by Chia-Wen Tsai (Ming Chuan University, Taiwan), Pei-Di Shen (Ming Chuan University, Taiwan), and Tsang-Hsiung Lee (National Chengchi University, Taiwan). This study explored the effects of the combined training in Web-based Problem-Based Learning (PBL) and Self-Regulated Learning (SRL) on low achieving students’ skill development via quasi-experiments. Two classes of 76 undergraduates in a one-semester course titled “Web Page Programming and Website Planning” were
chosen for this study. They were randomly assigned to two groups. The experimental group took the
course with PBL and SRL training, while the control group did not. An independent sample t-test was
used to compare students’ grades, and it was found that the experimental group was significantly higher
than the control group. Similarly, the involvement of the experimental group was higher than the control
group. The results from the focus group meetings indicated that high-performance students were able
to learn by doing and discovering, while those low-performance students could not learn through the
innovative learning approaches and preferred a “spoon-fed” teaching method. This chapter provides
valuable insights for those academics who are interested in applying innovative teaching methods,
especially for vocational training institutes.

Chapter 8, “The Future of Immersive Instructional Design for the Global Knowledge Economy: A
Case Study of an IBM Project Management Training in Virtual Worlds,” by Lia DiBello (Workplace
Technologies Research, Inc., USA) and Whit Missildine (Workplace Technologies Research, Inc., USA),
developed a 16-hour immersive collective learning experience for 25 mid- to high-level project managers
for project management training. The exercise was carried out in the Second Life Virtual Worlds platform
and aimed to accelerate learning among participants. The results were gathered through observation and
questions. Results indicated that participants experienced high levels of engagement with exercise. In
the second iterations, they were able to achieve goals by revising, reworking, and redeploying strategies.
Responses from participants indicated that the benefits of Second Life Virtual Worlds platform include
design flexibility, remote co-location, lower costs, and real-time feedbacks, while the disadvantages
include various technological breakdowns, which are similar to real-life scenarios. The results suggest
that virtual worlds have good potential for trainers or educators who need to work with global teams
on complex projects.

Chapter 9, “Crowdsourcing and Education with Relation to the Knowledge Economy,” by Kathleen
Scalise (University of Oregon, USA), applies crowdsourcing to the development and use of educational
materials, involves Web 2.0 tools to leverage collaboration, and produces materials from user groups
and stakeholders. Students had the opportunity to modify multiple-choice answers to construct their
own responses if they wished. A “modify” option was included in some of the questions so that content
can lead to the generation of new materials and new knowledge through tapping into the wisdom of the
group. Data was collected with crowdsourcing from 521 students. It was found that students used the
“modify” option to modify the answers to the questions only about 5% of the time when it was avail-
able. The modifications were largely an extension of the ideas rather than generating a new concept.
Comments from students were mixed on this innovation. This study prompts us to consider whether
more means better in designing IT-based assessments.

The third section of this volume is titled “Technology and Tools.” The learning environment (whether
classroom traditional teaching, virtual Web world, or any form of hybrid learning structures) must sup-
port the learners’ needs to facilitate and enhance their learning experience. Web-Based Learning Envi-
ronments (WBLE)—also known as Web-Based Learning Systems (WBLS)—incorporate the process
of “adaptation” and address rightly the cognitive traits and learning styles. The “adaptation” process
includes detecting the individual learning needs of learners and then adapting courses according to the
identified needs (Kinshuk & Graf, 2007). For designing and adapting a WBLS, it is important to un-
derstand the learners’ skills and match them with the right challenges through the right level of courses
targeted at them. Research has pointed out that learners with a strong learning preference for a specific
learning style might experience difficulties in learning if their learning style is not supported by the
appropriate teaching environment. Cognitive traits do not change with time and remain more or less stable. Changing learning styles requires training for the weak learning preferences in order to enhance them, which means even learning style is stable over time. Developing a proper technology-enhanced learning environment is a key to enhancing learning and making learning accessible to all learners by incorporating their individual cognitive traits and learning styles through the concept of “adaptation.”

Recent advances in computing and Internet technologies, together with the advent of the Web 2.0 era, resulted in the development of a plethora of online, publicly available environments, such as blogs, discussion forums, wikis, and social networking applications (Summerford, 2008). Web 2.0 is broadly defined as a second generation or more personalized communication mode that emphasizes active participation via the World Wide Web. Users of Web 2.0 not only create and own data but also mix, amend, and recombine content, and are relatively more “open to the world,” welcoming comments and revisions (McLoughlin & Lee, 2007). Many of us collaborate, create, and share new information on the Web through various Web 2.0 tools. Commonly used Web 2.0 platforms include Twitter, Facebook, Wikipedia, and Youtube. Section 3 includes five chapters:

Chapter 10, “Learning through Sharing and Regulation: A Case Study of Using Web-Supported Collaborative Learning with Initiation and Self-Regulated Learning,” by Chia-Wen Tsai (Ming Chuan University, Taiwan) and Yi-Fen Chen (Chung Yuan Christian University, Taiwan), proposes an appropriate design of Web-supported Collaborative Learning (CL) with teacher’s initiation and Self-Regulated Learning (SRL). The chapter also demonstrates the effects of this design on improving students’ involvement and helping students attain course goals in a blended course. The authors have conducted an experiment with an intervention of Web-supported CL with initiation and SRL in a course titled “Applied Information Technology: Networking” that included 112 sophomores from two classes at an academic university in Taiwan. The class of Web-supported CL with initiation and SRL was the experimental group, and online CL without initiation or SRL served as the control group. The results illustrate that Web-supported CL with initiation and SRL could significantly improve students’ involvement in this course. In addition, interviewed students also expressed their positive appreciation for Web-supported CL with initiation and SRL. The authors expect that the innovative learning activities and teaching methods in this study could provide insights for teachers to design their online courses and teaching methods.

Chapter 11, “Evaluating e-Learning Initiatives: A Literature Review on Methods and Research Frameworks,” by Stelios Daskalakis (University of Patras, Greece) and Nikolaos Tselios (University of Patras, Greece), elaborates evaluation aspects in relation to e-learning initiatives, which are currently gaining substantial attention. The authors argue that as technology continuously influences learning, technical as well as organizational requirements need to be thoroughly investigated across a variety of stakeholders. In this chapter, an outline of the abovementioned aspects is presented, which occurred from a literature review on methods and research frameworks utilized toward the evaluation of e-learning initiatives. The review identified a series of studies that take advantage of well-established theories in the area of users’ acceptance of technology combined with additional, e-learning context-specific factors. Results of the review are presented, according to the adopted research model, to ease the process of locating and retrieving e-learning evaluation paradigms per theoretical model. In addition, a series of research findings are discussed and future implications for e-learning evaluation initiatives as well as potential stakeholders are sketched. The research results presented in this chapter could contribute to more efficient e-learning design and implementation practices, thus further encouraging its proliferation and maturity.
Chapter 12, “Educational Services in Second Life: A Study Based on Flow Theory,” by Joana Ancila Pessoa Forte (FIC – Integrated Colleges of Ceara, Brazil), Danielle Miranda de Oliveira Arruda Gomes (UNIFOR / UECE – State University of Ceara, Brazil), Claudio André Gondim Nogueira (UNIFOR – University of Fortaleza, Brazil), and Carlos Felipe Cavalcante de Almeida (UNIFOR – University of Fortaleza, Brazil), proposes an understanding of the relationship between flow—as a result of the interaction between the individual and the machine—and the virtual educational environment in the virtual world of Second Life. Interactivity in spaces that promote relationships, entertainment, and businesses are elaborated. Second Life is considered because it is a tridimensional online environment that imitates human real social life. Despite social and commercial influences, Second Life suggests a new format for e-learning. Then, the question of how to explore the facets of an online learning environment may be answered by Flow Theory. Taking these issues into account, the main objective of this chapter is to analyze the most significant antecedent and subsequent relations of the Flow Experience in the Second Life’s educational environment. The research presented used tools from multivariate statistical analysis, such as confirmatory factor analysis and structural equation modeling. The results confirmed the hypotheses, indicating that there is flow in Second Life’s e-learning environment, with interactive speed, exploratory behavior, and tele-presence as the most significant constructs detected. Findings indicate that the use of tools available in virtual worlds can boost the traditional university education.

Chapter 13, “Learning Management Systems and Learning 2.0,” by Alexandros Soumplis (Hellenic Open University, Greece), Eleni Koulocheri (Hellenic Open University, Greece), Nektarios Kostaras (Hellenic Open University, Greece), Nikos Karousos (Hellenic Open University, Greece), and Michalis Xenos (Hellenic Open University, Greece), discusses Web 2.0 issues related to Learning Management Systems (LMS). As argued, the growth of Web 2.0 has affected learning and has made the growth of learning networks possible. Learning networks are shaped by communities to help their members acquire knowledge in specific areas and are the most notable feature of Learning 2.0, the new learning era that focuses on individual learning needs. The evolution of learning forces traditional LMS to incorporate more Web 2.0 features and slowly transform to Personal Learning Environments (PLEs). A PLE is a loosely structured collection of tools with strong social networking characteristics, which gives users the ability to create, maintain, and redistribute their own learning content. This chapter is a field study of the most well known and established LMSs and their support for specific features within several categories of tools of Web 2.0. The incorporation of Web 2.0 features within those LMSs differentiates them regarding their ability and potential to be used as PLEs. The analysis of the results presented in this chapter indicates the incomplete support of some core Web 2.0 features from the majority of the LMSs under examination.

Chapter 14, “Design and Evaluation of a Web-Based Tool for Teaching Computer Network Design to Undergraduates,” by Nurul I. Sarkar (Auckland University of Technology, New Zealand), and Krassie Petrova (Auckland University of Technology, New Zealand), discusses issues around the development of a Web-based educational tool. To overcome the problem of limited motivation from the student side to learn about Local Area Network (LAN) design—when presented in the traditional lecture format—a Web-based tool, namely “WebLan-Designer,” is proposed as an aid in teaching and learning of LAN design at the introductory level. WebLan-Designer provides a set of learning resources (such as tutorials, quizzes, network modeling, network design scenarios, key terms and definitions, and review questions and answers) and assists undergraduate students in learning the basics of both wired and wireless LAN design. The tool can be accessed at any time so that students can study LAN design at their own
pace and convenience. This flexible learning approach contributes positively to distance education and e-learning. The effectiveness of WebLan-Designer is evaluated both formally and informally; positive student and peer feedback indicates that the design and implementation of the tool has been successful and that using WebLan-Designer may have a positive impact on student learning and comprehension.

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REFERENCES


