Preface

Undeniably, there is a surge in research across the globe on distance education theories, practices, and in particular, technologies, which confirms the momentous role distance learning presently plays in education. Human learning is inherently multidimensional at the crossroads of cognitive-sociocultural and onsite-online continua. Technologies are breaking new grounds in not only enhancing individual dimensions of distance education but also in evolving the symbiosis of learning across dimensions, learners, instructional environments, and subject domains. Such enhancements and evolutions tend to push the boundaries of learning towards novel technological applications. They enable the exploration of new methods that integrate sound instructional principles with emergent learning technologies to foster productive and synergistic working relationships through interdisciplinary groups. In such interdisciplinary groups, instructional specialists, engineers, psychologists, sociologies, game developers, and other specialists converge to exploit technologies to educate, assess, and train future force.

CAPABILITIES OF DISTANCE EDUCATION TECHNOLOGIES

We believe that emerging distance education technologies have the following capabilities:

- Enriching learning by blending learning models that have traditionally proven to be effective with contemporary techniques that offer instructionally sound learning platforms.
- Conceptualising and representing courseware across multiple medium of instruction allowing students themselves to select a medium of choice for learning. In addition, since these technologies allow standardisation of annotatable content representation, they enable learners and instructors to interoperate across pedagogically relevant levels of content.
- Enabling personalisation of learning experiences, where the content itself moulds to the immediate needs of individual learners.
- Tracking learner activities that yielded optimum learning outcomes, thus allowing adaptation of future learning activities.
- Mapping curricular level administrative goals with departmental program goals; mapping the program goals onto learning objectives of individual courses; mapping learning objectives onto observed learning outcomes of individual learners; mapping observed learning outcomes onto expected competency goals of learners.
- Allowing administrators to establish shareable guidelines with academic units and instructors, which are transparent to learners, to ensure quality thresholds for learning.
NEW FEATURES

Distance education environments have been established as one of the core pillars of the human learning ecosystem, where knowledge is created, constructed, analyzed, disseminated, and recycled among educators and educatees. A distance education environment can also be treated as an ecosystem characterized by the interactions and the flow of information across learning activities enabled by technologies. Similar to the food chains in bio-ecosystems, learning ecosystems enable a web of interconnecting workflow-chains. In both ecosystems, the all-encompassing reality is the fittest survive. In bio-ecosystems, fitness is measured in terms of longevity and adaptability. In distance education, fitness can be measured in terms of quality of subject matter, subject matter understanding, pacing the learning, and transfer of learned knowledge, among other fitness traits.

Conceptualizing a distance education environment as an ecosystem enables one to identify learning components and technologies, to guide the flow of information across learning components, to measure the effectiveness of learning and teaching, and, most importantly, to engage in research that regulates knowledge-oriented fitness measures.

There are quite a number of new features evolving out of distance education technologies that transform the learning landscape. First, the “social” element is a powerful new feature that is currently being explored as the driving force behind advancements in distance education technologies. By complementing the social aspects that influence learning, socially-based technologies leverage learning efficiency and learning quality to significant levels. Distance education technologies for next generation learners need innovative methodologies and approaches to use social networking for solving “isolation” problems in disparate environments in a manner that significantly improves learning outcomes, in addition to catering to cognitive dimensions. It is also important to investigate the relationship between individual learning and social learning, and their complementary nature. With the shrinking distance among learners, thanks to effective distance education media technologies, personalized individual learning should ideally be complemented with social context and workflow-based team interaction. Future research in social learning will offer evidence to hone individual instincts, individual and team adaptability, supporting continued engagement with learning (curiosity), and promoting effective lifelong learning for all learners.

Next, continuous assessment is another new feature arising out of distance education technologies. In this information age, one should realize that learning is a continuum that embraces the five senses and integrate the “extended” digital consciousness that is normal for “digital natives.” New instructional approaches that assess individual learning activities as students learn should become conventional in education. Full credits to recent breakthrough in technologies, continuous and authentic assessment is much more conducive in distance education than in traditional classroom education. Now, it is time to start to remove unnecessary boundaries between “learning” and “assessment/evaluation.” Such boundaries characterize the current “Teach/Stop/Test” model of assessment/evaluation. With advancements on continuous and authentic assessments, we are ready to eradicate this model.

Moreover, self- and co-regulation is yet another new feature that is readily adaptable in distance education environments. Researchers have attempted to identify measures of self-regulatory abilities of learners using self-report, content analysis, or trace-data analyses. Literature on regulation reports that high achieving learners exhibit discernible self-regulatory abilities such as goal setting, self-monitoring, seeking help, and self-efficacy. The literature also introduces two open challenges: first, how to measure quality of how well learners apply self-regulatory abilities within and across contexts, and second, how to consistently demonstrate relations between self-regulatory abilities and learning outcomes such as
grades, application skills, and topic comprehension. Contemporary model-tracing and knowledge-tracing techniques can be employed to promote self-regulation traits for individual learners and co-regulation traits for groups of learners. These techniques, along with causal modeling techniques could be used to observe and promote learners’ regulatory tendencies in task-specific contexts, across multiple online learning environments, at real-time, leading to ontological computational records of study processes and skills exhibited by learners over longer periods of academic life. These formal records could enable one to compare the study habits (both self-study and online-collaboration) of learners from participating institutions within the country and across continents.

Furthermore, **ontologising competency knowledge** is expected to be one of the key features of distance education technologies. Learners exhibit a wide range of study skills when engaged in online and distance studies. Their interactions could be formally interpreted to extract the meaning of non-linear sub-sequences of actions in terms of target competencies. Presently, ontologies have been used independent of each other and sharing of ontologies is quite minimal across institutions. Institutions from around the globe can contribute to common “learning traces” ontology by sharing study habits of their students. This shared and continually evolving ontology can offer a distributed knowledge base on learning that could connect learning tendencies and traits observed/inferred from distance learners across institutions across the globe.

Additionally, **adaptive learning** is another compelling feature of distance education technologies. Educational data mining or learning analytics or educational informatics is playing a stellar important role in online education. For distance education, it is more meaningful to have innovative learner profile management strategies and technologies for both the capture and filtered sharing of individual and team competencies as well as other pertinent data about learners. Adaptation can prove to be effective at the content level as well as at the activity level. At the content level, one can expect the content delivery system to adapt the content to the individual needs of learners. At the activity level, one can expect the activity workflow system to adapt the learning environment to make it more beneficial to the individual needs of learners.

Besides, **intelligence** in instruction is not a new feature but an essential one. Artificial Intelligence (AI) techniques will play a major role in constructing intelligent tutoring and context-aware distributed systems that provide an adaptive, personalized experience for 24/7 training or learning opportunities and on-the-job performance aiding. AI systems should analyze the users’ profile, learning attributes, and competencies, thereby providing content tailored to the individual user. AI techniques should also be able to establish causal relations between quality of content, quality of instruction, learner effort, and eventually learner competency. AI systems could also be used to analyze trace data on learner habits and guide individual learners towards optimal study habits. AI techniques could semantically parse instructional material available on the Web and recommend appropriate material that suit the learner needs. The scope of application of AI techniques in instruction and learning is only limited by our imagination. One of the goals for intelligent distance education systems of the future is to build practical, persistent, open independent learner models with competency reasoning capability. To increase cognitive adaptability and emotional resiliency, intelligence should be transparently incorporated into distance educational systems. Moreover, AI-directed instruction should be complemented with personal context and social interaction.

As well, **purposeful communication** channels between students and instructors have flourished from simple emails to the near future possibility of life-size 3D holograms. Auditory, visual, smell, and touch have already been used as part of communication. Mixed-initiatives indicate the potential of human-like natural language conversations between software agents and students. Software agents
have already exhibited the capacity to negotiate, to argue, and to make informed decisions as part of learning technologies. Agents also have been shown to exhibit the capacity to disseminate strategies, particularly teaching strategies. With advances in Semantic Web technologies, one can expect agents to communicate with other agents to satisfy individual and group learning goals. Humans have already been construed simply as one of the entities in the communication loop, thus encouraging the notion that computational agents have the potential to make optimal decisions since they have the ability to collect and communicate necessary information.

Finally, ubiquity is emerging as a noteworthy factor in distance education technologies, particularly in the context of anytime, anywhere, anyhow learning platforms. One of the long-term goals of distance education technologies is to provide a persistent capability that allows distance learners to have access to effective, personalized learning content and/or job performance aids that can be presented in a transparent and ubiquitous fashion in a format suitable for their preferences and accessed from multiple devices/platforms through a learning agent. Virtual and simulated distance education environments need to be built to facilitate plug-and-play capability for realistic, immersive training, and continuous assessments. In such virtual/simulated learning environments, learners may operate in the virtual world, the real world, or an amalgamation of both as guided by the instructional goals.

CHAPTER OVERVIEWS

While the scope and depth of advanced distance education technologies keep growing, IJDET (International Journal of Distance Education Technologies) is being identified as one of the top avenues for researchers to share the continuous advancements technologies make in enhancing the scholarship of learning and teaching at a distance. A number of representative articles have been published in 2011 that correspond with the three key themes mentioned earlier—integration of instructional theories and technologies, blending online and onsite environments, and sustaining learning workflows—as well as the new trends in distance education technologies that have just been outlined. The following captures the essence of articles that IJDET published in 2011.

Imagine a customizable video delivery system that is sensitive to an individual learner’s needs, accommodating the constraints imposed by instructional devices, catering to the pedagogical aspirations of an instructor, and not the least self-healing! Well, there is no need to imagine this technology because it is already there. This research is compelling in that most educational institutions rely on the generic TCP/IP framework to deliver video, which tends to be ineffective for educational platforms where service standards are tightly linked with access bandwidth and means available for each student. Yan Liu, Xinheng Wang, and Liquiang Zhao in their chapter titled “Scalable Video Streaming in Wireless Mesh Networks for Education” present a well-tested wireless mesh network that is custom-built for educational video applications. It will not be long for the mesh to merge into a Cloud and start offering just-in-time video feeds corresponding to semantically enhanced queries from educators and students alike.

Semantic enhancement of search queries on the Web is still being conceived as a research problem because it is going to change the landscape of the Web into an all-meaningful Semantic Web. Millions of new educational resources are being added to the Web on a purely self-contained basis. That is, these resources are created and thrown out into the Web only adhering to technological restrictions. Consumers of these resources are left to fend for themselves, with some assistance from recommender technologies, to determine the quality and other meaningful attributes of these resources as they consume them. Chang-
Qing Huang, Ru-Lin Duan, Yong Tang, Zhi-Ting Zhu, Yong-Jian Yan, and Yu-Qing Guo in their chapter titled “EIIS: An Educational Information Intelligent Search Engine Supported by Semantic Services” present a novel framework to break this pattern and to automatically enhance semantics associated with learning resources. The proposed universal semantic search model not only allows one to balance between precision- and recall-rates of search queries, but also offers a method to gloss ontology-oriented semantic information onto new resources being introduced to the Web. Educational institutions can readily implement this technology in a course-specific manner to enhance distance-learning experiences.

While creators attach more meaningful information onto Web resources, consumers of these resources need to contextualize them to learning environments, study roles, and educational aspirations, among other attributes. Contextualization is more pronounced in mobile learning because of the “learn anytime from anywhere” platform. Haitao Pu, Jinjiao Lin, Yanwei Song, and Fasheng Liu in their chapter titled “Adaptive Device Context Based Mobile Learning Systems” present a formal definition of context for mobile learning and apply this definition to adapt mobile learning services to the specifications of mobile devices of learners. While validation of the utility of formal contexts in a wider educational setting is still being designed, the proposed definition forms an integral aspect of the context ontology. Fine-grained contextualization leads to highly personal learning services.

Constructing ontologies in an ad hoc manner remains quite widespread and had rather been a requirement to popularize the use of ontologies in real-world settings. However, the world of ontology has matured sufficiently to have widespread acceptance in many industries across multiple domains. In realizing the need to standardize ontology development, Hongyan Yun, Jianliang Xu, Jing Xiong, and Moji Wei in their chapter “A Knowledge Engineering Approach to Develop Domain Ontology” propose an IEEE standards-based life-cycle model to develop ontologies. This model enables formal evaluation of the resulting ontology with respect to specifications. By extension, any change to the specification in the future could automatically identify gaps in the ontology, thus allowing researchers to look only at places in the ontology that require modification. More importantly, this also paves way for automatic validation as well as automatic merging of related ontologies. Finally, merged ontologies could help identify gaps in merged ontologies but also gaps in knowledge engineering efforts of the ontology community.

While a number of distance education technologies directly target learning, some technologies target logistics of learning services. One such technology concerns distributed registration—registration of students to various educational services. Wenhao Li in the chapter titled “A Scheduling Algorithm for the Distributed Student Registration System in Transaction-Intensive Environment” proposes a dynamic and adaptive scheduling algorithm for distributed student registration in a transaction-intensive environment. This technology could accommodate transactions and workflows initiated by a variety of end users and could accommodate priority-oriented dynamic changes to schedules while maintaining optimality with respect to atomic transactions. Such enhancements to optimize learning services are essential to sustain the backbone of distance education since, unlike traditional educational offerings, the type, quality, mode, and frequency of learning services can be directed by the learning-constraints of the learner rather than just the instructional-plan of the instructor. In the near future, learners will be able to extract and optimize personalized learning plans and dynamically schedule study sessions in collaboration with adaptable workflow optimization technologies such as the one proposed by Li, targeting specific competencies.

Be it a semantic search that paves the way for effective learning or a causal assessment model that formally links a learner’s study effort and cognitive load to learning performances, a number of distance education technologies directly aim at the goals of learning. One such technology by Xiao Ke, Shaozi Li, and Donglin Cao reported in the chapter titled “K-Nearest Neighbors Relevance Annotation Model...
for Distance Education” enables objects to be recognized and annotated automatically from images and, specifically, addresses the “semantic gap” and “high complexity” problems associated with relevance models in image auto-annotation. With this, systems will be able to annotate both foreground and background objects in the image and offer better annotation performance. Using this technology, one can conceive the possibility of semantically clustering images on the Web automatically. It is also possible to locate optimal instructional placeholders for these images in appropriate learning contexts. Automation of annotative capabilities and dissemination of annotated material among members of a social group are essential features of co-regulated learning environments. Annotation capabilities are also shown to be effective in self-regulated learning scenarios.

One of the key facets of distance education is its ability to granualise instruction and to apply a single abstracted technology across multiple domains. There are granular technologies that can target a variety of instructional goals across multiple domains. One such technology is about feature extraction from videos. Feng Guo, Shaozi Li, Ying Dai, Changle Zhou, and Ying Lin in their chapter titled “Research on Key Technology in Remote Education System of Spirit Diagnosing by Eye in TCM” employ associative data mining techniques to extract features from video images of a patient to automatically detect the mental state of that patient to a high degree of accuracy with respect to a corresponding mental state detection by physicians. Before long, one can imagine the use of this technology to offer engaging, effective, and highly interactive learning activities with respect to extracted features of learner attention, learner motivation, learner capability, and learner telepresence in virtual worlds.

Presently, distance education technologies have been widely accepted as supplemental to onsite delivery of courses. A few places even successfully offer fully online courses by fusing innovative technologies in theoretical frameworks. However, researchers have always been inquisitive about these two popular modes of course delivery—traditional onsite delivery and the new online delivery. Ned Kock and Vanessa Garza in their chapter titled “Media Naturalness Reduction and Compensatory Channel Expansion: A Study of Online and Face-to-Face Sections of the Same Course” present a study that tested the utility of onsite course delivery with respect to online course delivery in the context of a single course. The study shows that, at the beginning, online students had significant difficulties in getting used to studying online in comparison with onsite students. This difference supports the media naturalness theory claiming that evolution has made our brains more receptive to face-to-face communication than other forms. However, as they progressed, online students were able to pick up the pace, supporting the channel expansion theory, and perform better than onsite students toward the end of the course. The authors show that online course delivery may lead to both negative and positive effects in the same course. Extending this, one could speculate that highs and lows of effects of online technologies could be observed within the span of a single learning activity. Further, one could speculate that temporal effects of online technologies are also influenced by the learning style of individual learners.

Does technology adoption in distance learning relate to English language adoption? Generalizing this, can we establish a relation between Information and Communication Technology (ICT) readiness across countries and the English language adoption among these countries? Hui-Wen Vivian Tang, Mu-Shang Yin, and Ru-Shuo Sheu in their chapter titled “The Relationship Between English Language Adoption and Global Digital Inequality: A Cross-Country Analysis of ICT Readiness and Use” set out to explore this very question and showed that English language adoption is not a dominant factor in determining ICT readiness of a country, but is in determining levels of economic development. In arriving at this conclusion, the authors argue the finding of another study that English language adoption is indeed related to the degree of Internet usage in a country.
Irrespective of the language of communication, Tannaz Alinaghi and Ardeshir Bahreininejad in their chapter titled “A Multi-Agent Question-Answering System for E-Learning and Collaborative Learning Environment” present a multi-agent system that supports question-answering mode of communication for online students. The system recommends an appropriate response based on the student’s knowledge, research background, and history of previous questions and responses. The authors show that the system is quite practical to use in online environments, both in individual learning and collaborative learning. The scope of the search space could be expanded to other learning contexts similar to the one being experienced by the student, where multiple agents could scour for more appropriate responses in other learning contexts. Over a period of time, an ontology could be automatically constructed by accumulating knowledge gleaned from the question-answering system.

One of the basic support systems for distance education technologies concerns a helpdesk for the learning management system (or similar systems) that offers instructional guidance to students. It has been shown that students do face a significant amount of difficulties from the learning management system. Aiguo He in the chapter “Online Operation Guidance of Computer System Used in Real-Time Distance Education Environment” proposed and validated the use of a real-time operating guidance system to assist learners in negotiating with the learning management system. In the near future, can we expect voice-controlled interfaces as a potential solution? Maybe the learning management system itself should adapt its interfaces by following the intentions of the student.

Online learning technologies can be customized for students of a single institution to a much higher degree than the generic use of the same. Chin-Hung Lin and Shu-Ching Yang in their chapter titled “The Effects of Videoconferenced Distance-Learning Instruction in a Taiwanese Company” discuss one such customization for videoconferencing, where the emotional intelligence consideration in the design of videoconferencing is shown to have a significant impact on learning achievement. This work is significant in light of the impending arrival of affective computing and telepresence as distance education technologies.

In redefining the role of assessment, Vuyisile Msila in the chapter “Open Book Examinations in a Distance (Teacher) Education Programme: South African Teacher-Learners’ Experiences” explores the potential of open book exams for distance learners, with or without technological support for conducting the same. The study reports that students were not prepared to tackle associative questions that are common in open book formats. The study also showed a lack of understanding among educators to analytically connect learning goals with learning activities and learning assessments. A number of universities do undertake the exercise to connect these three aspects of courses as part of their quality assurance initiatives. Maybe it is time to adopt a standardized curriculum mapping framework that would work across curricula.

One should continuously monitor the utility of the technologies that enable distance education, particularly in institutions that rely on technology-oriented instruction. Andreas Konstantinidis, Pantelis M. Papadopoulos, Thrasyvoulos Tsiasos, and Stavros Demetriadis in their chapter “Selecting and Evaluating a Learning Management System: A Moodle Evaluation Based on Instructors and Students” describe a procedure that was used to evaluate learning management systems based on feedback from instructors as well as students. Timely and regular assessment of the current learning management system could also show gaps where the institution could exploit new and upcoming features that offer value-added learning guidance and effective content delivery.

The relation between learning effort and learning performance is quite complicated because most of the intervening variables are either unknown or hard-to-measure. However, as with advancements in
distance education technologies, researchers are able to computationally measure effort, performance expectations, and other related cognitive traits exercised by students in precise and consistent values. Pi-Shan Hsu and Te-Jeng Chang in their chapter titled “Validation of Learning Effort Algorithm for Real-Time Non-Interfering Based Diagnostic Technique” take on the challenge of validating one of Cognitive Load Theory’s tenets—the relation between effort and performance in human learning. Rather than following traditional methods, the authors embarked on a technology-oriented approach where this relation is measured dynamically, at real-time, without interfering with the student’s learning approaches. The algorithm proposed by the authors successfully matches the theoretical prediction—cumulative learning effort tends to decrease for learners with high learning performance, and cumulative learning effort tends to increase for learners with low learning performance. It would be an excellent intervention strategy to show the learning progress to students and measure the effectiveness of indirect intervention in learning performances. It is also possible to employ an expanded form of the algorithm in conjunction with the CTAT cognitive tutors, where learner activities can be tracked, with or without intervention, to a higher scale of granularity.

The problem-solving process need not start from the very first step of solution! Instead, it could start from a simple question from a post in a FAQ. Yuqin Liu, Chengjiu Yin, Hiroaki Ogata, Guojun Qiao, and Yoneo Yano in their chapter titled “A FAQ-Based e-Learning Environment to Support Japanese Language Learning” offer a simple database search mechanism that enables students to search the FAQ effectively. The authors also ran a study to determine the effectiveness of a FAQ in instruction. While the FAQ technology is at least two decades old, it still seems to play a significant role in instruction. One could potentially upgrade the search mechanism to include semantic queries that extract the intent of the question and find answers that are pedagogically appropriate.

The key to successful research is in its details. Li-Jyu Wang and Hung-Fan Chang in their chapter titled “Improve Oral Training: The Method of Innovation Assessment on English Speaking Performance” present, in detail, a study that assesses learners’ English speaking performance and communication apprehension. The authors used two independent instruments to analyze the effectiveness of digital portfolio and video monitoring activities on communication apprehension and English speaking performance. The description of the study itself is of great value to readers of this chapter as much as the results of the study. Importantly, the limitations of the study also offer valuable pointers to understand the scope of the study and potential future directions. If anything, this chapter offers an excellent starting point for novice researchers.

For distance education technologies, the variety among learners offers a unique research challenge. How does a single technology cater to the multitudes of learners? Can the technology be customized to cater to the needs of a single group of learners? Angela Guercio, Kathleen A. Stirbens, Joseph Williams, and Charles Haiber in their chapter titled “Addressing Challenges in Web Accessibility for the Blind and Visually Impaired” tackle the challenges of Web accessibility for blind and visually impaired learners. They offer a tool that filters a Web page for information and presentation that is relevant for these learners. The filtered information and the quality of presentation can be measured to decide if a Web page is worth reading. Importantly, learners can personalize the tool to fine tune the filtering process. The tool has been tested and the results show that filtering based on static page restructuring is highly beneficial to blind and visually impaired students. With the advent of new types of media on the Web, it is important to redesign the filter to assess and accommodate new types of media and content, dynamically. One possibility is to define media-specific presentation rules and content-analysis rules, and rank these rules based on their relevancy to a particular subgroup of blind and visually impaired students.
The onus is then on the content developers and Web page designers to take these rules into account as they develop Web material. Further, the filtered page elements could then be subjected to another set of rules that address the competency requirements of learners.

There are a number of open-sourced learning management systems available in the market. However, selecting the one system that caters to the needs of an institution is rather hard because every system has deficiencies that lead to instructional and learning gaps. Yuki Terawaki, Yuichi Takahashi, Yasushi Kodama, and Kazuo Yana in their chapter titled “The Development of Educational Environment Suited to the Japan-Specific Educational Service Using Requirements Engineering Techniques: Case Study of Running Sakai with PostgreSQL” take on the challenge of making components of learning management systems interoperate with each other. As an exemplar, the authors show integration potential between the Sakai and CFIVE learning management systems at the database level. What about the interface level integration—can the student select a Sakai look-and-feel on top of CFIVE? Can the underlying pedagogy itself be transferred between systems—can the curriculum maps of CFIVE be made compatible with that of Sakai? While most institutions appear to prefer a single system to offer multitudes of instructional possibilities, it is an interesting viewpoint to bring multiple learning management systems to the backend and offer customizable learning experience to the learner using a unified interface.

Game-based learning is one of the exciting avenues for distance education researchers. Not only do games engage learners in a surreptitious learning task but they also tend to maintain a high level of attention among learners. Carmelo Ardito and Rosa Lanzilotti in their chapter titled “An EUD Approach to the Design of Educational Games” present an end-user design approach to develop effective game-based learning environments. While an experimental study has not been performed, the prototype that enables the end-user design has been well received among game developers. Importantly, this approach allows end-users to take an active part in the design of the game.

Ruey-Shiang Shaw, Huan-Chao Keh, and Nan-Ching Huang in their chapter titled “Information Security Awareness On-Line Materials Design with Knowledge Maps” have tested the utility of knowledge maps in the domain of information security awareness. Knowledge maps have been known to be beneficial for some time now. However, the infusion of a knowledge map as an integral and well-connected element of the course material is a different challenge. The authors present an approach to do just that and test it experimentally. The study shows that a well-designed knowledge map contributes to improved learning performances of online learners.

Faculty engagement has been infused to various degrees across a variety of distance education technologies. How much of faculty engagement is good? Is there a predictive relation between faculty engagement and learning satisfaction? Does faculty engagement imply better learning outcome? These are the questions addressed by Cherng-Jyh Yen and M’hammed Abdous in their chapter titled “A Study of the Predictive Relationships between Faculty Engagement, Learner Satisfaction, and Outcomes in Multiple Learning Delivery Modes.” On the basis of a well-designed study, the authors conclude that faculty engagement is an effective predictor of learner satisfaction and learning outcomes. This is an important attestation since distance education technologies at times tend to reduce the scope of faculty engagement in online learning environments.
CONCLUSION

Humanity advances only on the basis of its collective knowledge and learning potential. Modern distance education technology is a vibrant and exciting research area, which offers a wide range of knowledge frontiers to be studied and learning potentials to be exploited. The research area is highly interdisciplinary in nature, already involving domains such as computing, information systems, interaction design, sociology, psychology, and education, while attracting many more to join.

Various innovations and applications have been proposed, designed, implemented, and tested for effectiveness, and the chapters in this book report on a number of significant system and technological innovations and advanced applications published in 2011 under distance education technologies, as well as lessons learned for the consumption of the larger community. Our hope is that, collectively, these accomplishments and lessons learned inspire and challenge educational technology researchers and modern distance educators.

This collection will certainly be of interest to online and distance educators, educational policymakers, learning designers, and graduate students working in education technologies, learning, information systems, and cognitive sciences. In addition, this book will be of value to the general public who are interested in understanding current and futuristic advancements in distance education, to parents who care about their children’s education in the Internet Age, and administrators who aim to exploit proven contemporary trends in training environments.

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