Preface

There are a good number of questions to answer about the quality of education now and in the future. We can control what learners should learn and what they should not at schools through curricula. However, this is not always true outside the school, where most learning experiences happen informally. Students spend a considerable amount of their time in learning individually on mobile tools. This time can even be more than the time they spend at school or classroom. Considering that the learner of the future is totally “digital natives” who have never lived in a world without Internet, it seems we cannot confine learners and learning in between walls of an education institution anymore. The world is becoming a mobidigital virtual space where people can learn and teach digitally anywhere and anytime, and we cannot always control what students learn through these media. Emerging mobile technologies like wearables and platforms like social media or clouds make the transformation even faster. Thus, today more and more education is happening outside from schools or universities through technology. We as educators and scholars should ask for technological solutions to control and support teaching and learning outside formal institutions. So we should answer such questions as “How can technology enhance learning outside education institutions?”, “How can we control the outcomes of mobile learning?”, “What are the responsibilities of teachers and parents in monitoring and regulating technology use by students?” “How can social media be a part of formal education?”, “Should we limit technology use at schools or outside?”, “What are the new areas of research in mobile and ubiquitous learning?”

With respect to all these and similar questions, this book brings a very new topic of the research field Technology Enhanced Learning to our minds, called Seamless Learning. Due to the huge amount of different mobile devices and their ubiquitous availability, the learning process has led into a new dimension – from the typical formal setting to an informal one. In other words, today learning can happen anytime and anywhere assisted by different digital devices like smartphones, wearables, cloud technologies etc., which are connected to the World Wide Web. Thus, the concept of Seamless Learning is becoming more and more popular, because it allows kind of continuity between formal learning environments and informal learning occasions through the above-mentioned digital tools. Thanks to these digital tools, learners can collaborate and interact in new ways with their peers and teachers, thus develop self-regulated learning skills. Different learning situations can be combined via mobile ubiquitous devices into seamless learning scenarios as part of lifelong learning. The formal learning activities conducted in schools following a certain curriculum cannot be enough for learners to develop lifelong learning skills. However, the fast pace of new developments necessitates individuals to develop lifelong learning skills. Thanks to mobile and ubiquitous learning devices and platforms, seamless learning can provide opportunities for individuals to develop lifelong learning skills, as well as self-regulated learning skills.
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This book intends to offer the readers precise definitions about emerging tools and technologies for seamless learning, with a strong focus on how they are/can be used for education via ground works, field studies, and case studies. Therefore, we searched for contributors on the following topics relating to use of or integration of technology into education:

- Mobile learning and wearables
- Social media,
- Ubiquitous learning,
- Digital natives,
- Technology enhanced learning in the future classrooms,
- Virtual worlds and augmented reality,
- Next generation learning,
- Seamless learning,
- Learning analytics,
- Internet of Things (IoT).

The target audience of the book includes all stakeholders of the field of education e.g. teachers, students, parents, principals, researchers working in the field of education in various disciplines, e.g. educational technologies, pedagogy, psychology, information and communication sciences, adult education, and sociology.

OVERVIEW

As a result of a meticulous process of invitation, submission, review, revision, and decision, we refined a total of sixteen chapters selected and included in this book out of a high number of proposals. Below you can find brief introductory paragraphs for each chapter organized in alphabetical order:

The Chapter “A Math Training Platform to Foster Individual Learning” proposes a new way within the context of mathematics education using the standard format pdf with completely auto-generated tasks for seamless learning and presents new learning scenarios for collaborations. The chapter discusses the possibility of automatic generation of mathematical tasks in pdf format and the use of this task in combination with new technologies like MS OneNote and Tablets, which provides more individualized learning opportunities and even outside the classroom a number of different examples and solutions are available.

The Chapter “Augmented Reality with Mobile and Ubiquitous Learning: Immersive, Enriched, Situated, and Seamless Learning Experiences” examines the mobile learning and augmented reality in terms of the opportunities they offer for learning through immersive, enriched, situated and seamless learning experiences. The chapter argues that augmented reality can be used for situated learning and inquiry learning model fostered by mobile and ubiquitous learning that provide seamless learning experiences among formal, informal and non-formal domains. Hence, the combination of hard (mobile and ubiquitous) and soft (augmented reality) technologies should be integrated into learning process to be able to get more effective learning results.

The Chapter “Brave New Digital Tools for Action Research in Education: A Beginner’s Guide” presents a brief overview of digital tools that can be used for action or practice research in the context of
seamless learning. It also provides some initial orientation and deeper insight into the complex subject matter of digital science. The authors describe many tools featured with a participatory approach like action research where technology can fully develop and support both seamless research and learning.

The Chapter “Designing Seamless Learning Using Role-Playing Experiences” examines seamless learning through three case studies that incorporate role-play as a pedagogical approach to integrate contextually aware learning from the formal classroom to informal spaces both face-to-face and online. The authors assert that role-playing should be part of the seamless learning approach, since it can mediate learners’ access to different knowledge areas through various perspectives, just as technology can serve as mediators in the seamless learning paradigm.

The Chapter “Education, ‘Pointsification,’ Empowerment? A Critical View on the Use of Gamification in Educational Contexts” presents a comprehensive overview of the popular concept of gamification as a tool or procedure which is apt to change the non-entertaining or demotivating faces of schools with definitions and examples. The chapter discusses how gamification can bring in challenge and excitement to the learning, seeking answers to such questions as “Can entertainment and education be combined by technical means at all?”, “What are the possibilities and limits?,” “What implications have to be expected regarding the relationship between teachers, students and a technological – gamified – environment?”

The Chapter “Enhancing Learning with Wearable Technologies In and Out of Educational Settings” discusses the educational potentials and ethical issues concerning the wearable technologies, which has become a growing field recently. Besides defining the background and major examples of wearables, authors provide a comprehensible discussion of educational and seamless learning potential of these devices including student engagement, contextual learning, recording & sharing, evaluation & feedback, administrative functions. The chapter further summarizes four practices regarding use of wearable technologies in educational settings. Finally, the authors also warn against possible ethical issues regarding privacy, accuracy, intellectual property and accessibility.

The Chapter “Exploring the Educational Potential of Internet of Things (IoT) in Seamless Learning” introduces Internet of Things (IoT) as a necessary and useful concept to support seamless learning. The authors discuss that with its capacity to communicate with one another or with human beings via internet, and to store and exchanging the collected data on cloud computing systems simultaneously, IoT technology is expected to be used in education, and contribute to seamless learning experiences in particular.

The Chapter “How to Design a Mathematical Learning App Suitable for Children: The Myth of Digital Natives” examines the main considerations that influenced the development and implementation of an educational application for elementary school children to help them practice long divisions. The authors discussed the design principles for technologies suitable for children, as well as the framework for designing and using digital applications in the classroom, as the institutional setting of the Austrian school system, the myth of digital natives, and the Mobile Seamless Learning and Adaptive Learning approaches.

The Chapter “Is Digital Age a Tsunami for Distance Education? Functional Roles of Scaffolding and Meta-Communication in Digital Learning Environment” discusses the on functional roles of scaffolding and “meta communication” in digital learning environment for creating “Tsunami” effects on education and attempts to explore the knowledge building for more democratization concept and movement issues that gears open and distance educations. The chapter looks into the impact and the types of evidence that are generated across initiatives, organizations and individuals in order to make a summative analysis and it has recommendations from point of functional roles of scaffolding and meta-communication perspective within digital learning environment aspect. Finally, the author intends to provide some insight into
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the dynamics of the digital age that is considered as revolution or as ‘tsunami’ which is applied in open and distance education systems.

The Chapter “Learning with Social Media: A Case Study at a Latin American University” investigated how university students select among and use different web tools in both formal and informal education settings. The case study emphasized how university students can use devices and applications as a simple remote control, disregarding possibilities for learning provided by these technologies. The authors also show how university students select the relevant applications in arbitrary ways just in response to advertising or following after their friends.

The Chapter “Linking Virtual and Real-Life Environments Scrutinizing Ubiquitous Learning Scenarios” provides a profound insight into the potentials for ubiquitous learning (u-learning) environments in recent years. The chapter describes u-learning as a form of self-regulated learning and differentiates it from other popular forms of technology-based education such as mobile learning. Additionally, opportunities for meaningful u-learning environments are defined together with the requirements of u-learning environments based on literature review. Finally, the chapter provides authors with recommendations for the educational use of ubiquitous technologies based on a review of recent research, as well as future research directions for researchers.

The chapter “Motivational and Ethical Issues in Seamless Learning: Use of Tablet PCs in a Mobile and Ubiquitous Technology-Enhanced Learning Context” aims to explain seamless learning with regard to motivational issues and ethical usage of technology in the context of a mobile and ubiquitous Technology-Enhanced Learning (TEL). The examined TEL environment consisted of a popular technology integration project in Turkey called FATIH (in English, The Movement to Enhance Opportunities and Improve Technology). Accordingly, the chapter investigates and presents findings on the effects of technology-enhanced learning environments in terms of students’ motivation and ethical issues during their interaction with the learning environment and community.

The Chapter “Social Media in Higher Education: Enriching Graduate Students’ Professional Growth Outside the Classroom” investigated the instructional design graduate students’ current use of social media for professional growth. More specifically, it scrutinized how the use of social media as a means to share information about events, links, internships/jobs, and other announcements related to the field of instructional design and technology affect the learners’ awareness and participation in professional growth as instructional design practitioners outside the traditional classroom environment. The author highlighted the benefits of active participation for the learners, in addition to some challenges for engagement of graduate students. The chapter as a whole sheds light on the role of the social media (social networking) initiatives on the professional growth of graduate students in higher education.

The Chapter “Social Media Strategies for Seamless Learning: Approaches and Metrics” discusses the best practice approaches and evaluation metrics that support seamless learning with social media on three different organizational levels: (1) the learning organization, (2) the learning program/curriculum and (3) the individual teacher/learner. The authors first sketch a brief overview of the history and evolution of social media and seamless learning to establish how these concepts are connected together. Then they draw upon the theoretical frameworks of social learning theory, transfer learning (bricolage), and educational design patterns to elaborate upon different ideas for ways in which social media can support seamless learning. Finally, they present three case studies to exemplify how social media can support seamless learning on the organization, program, and the individual levels.

The chapter “The Adoption of Mobile Devices as Digital Tools for Seamless Learning” examines preservice teachers’ views about and uses regarding mobile learning, in terms of effectiveness of mobile
learning, mobile design preferences, mobile device use for learning purposes, types of activity conducted with mobile devices and their frequency of mobile devices. The authors emphasize that university students have very positive attitudes towards mobile learning and they think m-learning is a really effective learning method. The chapter also puts forward that preservice teachers use mobile devices mostly for two purposes: socialization and entertainment. The chapter reveals several other findings about preservice teachers’ views on the ubiquitous nature of mobile learning, the prerequisites for a mobile application etc.

The Chapter “Virtual Learning: Videogames and Virtual Reality (VR) in Education” intends to explore the seamless learning opportunities learners and instructors are provided thanks to video games and virtual reality. In this respect authors analyze emerging trends and learning understandings (epistemologies) built by video game users and learners represented in the forms of avatars. They assert that digital environments are in fact transforming the way learners and instructors (faculty) interact with each other in and across contexts. The chapter examines students’ self-identity construction, problem solving, and learning in virtual environments through using data from two parallel research projects.

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