

Preface

Immersive Education has been an active topic of interest for educators, researchers, and businesses for nearly a decade. As the enabling technologies continue to evolve, immersive scenarios and environments are increasingly becoming more mainstream. What once had to be developed, deployed, and maintained by specialists can now be created by a broad and largely non-technical audience.

Ongoing research scenarios range from architectural applications such as pre-visualization and augmented enhancements to data goggles and game-based learning. In order to discuss upcoming topics and research results Immersive Education (iED) Summits were established in 2005. As organizer serves the Immersive Education Initiative, a non-profit international collaboration of educational institutions, research institutes, museums, consortia, and companies.

Immersive Education Summits (iED Summits) are official Immersive Education Initiative conferences organized for educators, researchers, administrators, business leaders, and the general public. iED Summits consist of a broad variety of presentations, panel discussions, break-out sessions, demos, and workshops that provide attendees with an in-depth overview of immersion as well as the technologies that enable immersive scenarios, experiences, and environments. iED Summits feature new and emerging virtual worlds, game-based learning and training systems, simulations, virtual reality and mixed/augmented reality, fully immersive environments, immersive learning and training platforms, cutting-edge research from around the world, and related tools, techniques, technologies, standards, and best practices.

Building on the previous 8 years of Immersive Education conferences, the 4th European Immersive Education Summit (EiED 2014) was organized in conjunction with the University of Applied Sciences bfi Vienna, Graz University of Technology (both Austria), and the University of Bremen (Germany). The theme of the 4th European Immersive Education Summit was “Science Meets Business – From Innovative Research to Successful Services and Products.”

The summit brought together highly qualified experts from more than 13 countries. The acceptance rate was 62 % in order to aim for a high quality of work. The summit also hosted a location-based learning game that actively engaged participants in an immersive sightseeing and learning experience that took place throughout the Inner City of Vienna.

This book in your hands contains the final best research papers presented at the 4th European Immersive Education Summit. After a double-blind peer review process we carefully selected publications with the best feedback and ranking. Authors of the top-ranked papers were invited to extend their publications and submit them to be included in this book. You will find interesting research studies from a broad research field.

The research study in “A Contribution to Collaborative Learning Using iPads for School Children” aims toward enhancing the learning experience, stimulating

communication and cooperative behavior to improve learning. Making use of recent technological advancements (tablets) and gaming as a motivational factor, a prototype application in the form of a multiplayer learning game for iPads was designed and developed. An initial field study at two primary schools in Graz showed promising results for the learning behavior of school children.

The paper “Mining and Visualizing Usage of Educational Systems Using Linked Data” introduces a case study on usage of semantic context modeling and creation of linked data from logs in educational systems like a personal learning environment (PLE) with a focus on improvements and monitoring such systems, in general, with respect to social-, functional-, user-, and activity-centric levels.

The work in “Determining the Causing Factors of Errors for Multiplication Problems” detects the difficulty levels within a set of multiplication problems and analyzes the dataset on different error types as described and determined in several pedagogical surveys and investigations.

The paper “Tutoring Teachers – Building an Online Tutoring Platform for Teachers’ Community” elaborates on the design, the first prototype, and an early evaluation of the Go-Lab Tutoring Platform.

In the study presented in “Towards Digital Immersive and Seamless Language Learning,” the authors investigate the potential of new technologies and want to find out how immersion teaching is supported through seamless learning approaches.

In “How to Detect Programming Skills of Students” the authors focus on designing the technique to detect and recognize programming patterns from student’s program source codes. Finally, they propose some use cases and further directions of their research.

“Binding Daily Physical Environments to Learning Activities with Mobile and Sensor Technology” presents the NFC LearnTracker, a mobile tool proposing that the user introspect his/her autobiography as a learner to identify successful physical learning environments, mark them with sensor tags, bind them to self-defined learning goals, keep track of the time invested on each goal with a natural interface, and monitor the learning analytics.

The paper “Immersive Installation: “A Virtual St. Kilda” discusses a Virtual Histories project, which developed a digital reconstruction of the St. Kilda archipelago. The simulation covers 4 km² of virtual space, and models both tangible and intangible culture.

“Mobile Exploration of Medieval St. Andrews” presents work that explores using mobile technologies to support investigation, learning, and appreciation of the past. It builds on tradition and world-class scholarship into the history of this important town and makes them available to school students, researchers, and tourists using mobile technologies.

“Theoretical Issues for Game-Based Virtual Heritage” critiques essential features in prominent theories of serious games, and compares them with interaction features of commercial computer games that could be used for history and heritage-based learning in order to develop heuristics that may help the specific requirements of serious game design for interactive history and digital heritage.

“GAMEDUCATION: Using Gamification Techniques to Engage Learners in Online Learning” reviews theories and research related to learner motivation and

engagement. Moreover, it proposes using Gamification in the context of education to tackle the lack of learners' engagement.

We would like to express our gratitude to all supporters of the conference as well as the chairs, reviewers, contributors, and organizers. We are equally indebted to all helping hands before and during the event.

Additionally we would like to thank everyone who made this book such a great resource. Their names are listed herein.

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