

## **International Conference on Applied Education, Technology and Innovation (THEi AETI 2019)**

"Education 4.0: Applied Degree Education and the Future of Work"

April 16–18, 2019

### ***Final approved abstract***

Anttoni Lehto, [anttoni.lehto@turkuamk.fi](mailto:anttoni.lehto@turkuamk.fi), Turku University of Applied Sciences (TUAS)

Rauli Lautkankare, [rauli.lautkankare@turkuamk.fi](mailto:rauli.lautkankare@turkuamk.fi), Turku University of Applied Sciences (TUAS)

Nina Brander, [nina.brander@turku.fi](mailto:nina.brander@turku.fi), Upper Secondary School Turun Suomalaisen Yhteiskoulun lukio (TSYK)

Christiane Ala-Nissilä, [christiane.ala-nissila@turku.fi](mailto:christiane.ala-nissila@turku.fi), Upper Secondary School Turun Suomalaisen Yhteiskoulun lukio (TSYK)

Joona Saari, [joona.saari@scandinarea.com](mailto:joona.saari@scandinarea.com), Scandinavian Renaissance

Juuso Salminen, [juuso.salminen@turkuamk.fi](mailto:juuso.salminen@turkuamk.fi), Turku University of Applied Sciences (TUAS)

### **Rapid Experimentation as a Co-Creation Tool for Gamified Augmented Reality in City Spaces – Case ARriver**

*New educational technology is the most visible driver of change in education. EduTech changes the ways students learn as well as the role and responsibilities of teachers. Rapid technological development has been difficult to follow in terms of validating new applications pedagogically and adopting them structurally on organizational or national levels. Navigating these challenges requires open-minded cooperation between public and private actors.*

*ARriver is an umbrella concept focused on utilising augmented reality (AR) technology around the Aura River in central Turku, Finland. ARriver's purpose is to bring together upper secondary school content creation with rapid experimentation stemming from the individual needs of companies and start-ups – a process that is facilitated by a university to create an AR learning environment for students on multiple levels of the Finnish educational system. The concept has been developed as part of the Smart Learning Environments for the Future project funded by the European Regional Development Fund.*

*The key challenges of the approach are to:*

- 1. synthesise the interests of local companies and educational institutions, the city of Turku, as well as public and national development organisations*
- 2. utilise the process of iterative rapid experimentation to create a sustainable collaboration framework that is viable also from the viewpoint of businesses*
- 3. create a learning environment that is pedagogically validated both in its co-creational activities and as a gamified learning tool for improved learning results.*

*Initial tests within the ARriver concept were conducted in late 2018. Facilitated procedurally by TUAS and technologically by Turku Game Lab, rapid experimentation was focused on a smart city platform by the start-up Scandinavian Renaissance. The content for the platform was produced by TSYK students and curated by TSYK teachers. With some items like a medieval ship and an escaped prisoner from a close-by historical prison already in place on the riverbanks, the experimentations continue in 2019.*

*The goal is to create a self-sustainable process open for engagement for any interested party. This will be partly ensured by anticipating the changes in the Finnish curriculum for upper secondary schools in Finland and by following the strategies of the educational institutions involved. Even according to the current national curriculum, Finnish upper secondary schools should strive to offer more opportunities for students for engaging directly with the surrounding society. The ARriver approach enables companies to take*

*advantage of pedagogical freedom of Finnish teachers in educational product development and to test their products at a very early phase. While businesses look to create added value related to the younger generation's learning capabilities and creative input, it is the teachers' responsibility to evaluate the process as a whole from a pedagogical standpoint.*

*The initial implications of the approach are that a win-win-win-win situation is possible. This potential may thus lead to a process sustainable enough to enable a paradigm shift relating to future smart cities as a learning platform. Reachable by users' own mobile devices, this particular learning environment can be scaled to function for many target groups – including tourists – and within other city spaces.*

**KEYWORDS:**

*rapid experimentation*

*gamification*

*pedagogical validation*

*learning environments*

*smart city*

*inclusion*

*co-creation*

*AR*

*Anttoni Lehto is the project manager of the EU-funded Smart Learning Environments for the Future project for Turku University of Applied Sciences. Holding an MA from School of Arts Studies at University of Turku, he has years of experience in game-related projects, open science practices and learning environment development.*

*Rauli Lautkankare is the content manager of the EU-funded Smart Learning Environments for the Future project for Turku University of Applied Sciences. An expert on construction engineering earlier in his career, he currently concentrates on bringing public and private organizations together for some out-of-the-box-thinking regarding AR/VR.*

*Nina Brander is a pedagogical expert of the EU-funded Smart Learning Environments for the Future project for the Education Division of the City of Turku. She has taught biology and geography in upper secondary schools for twenty years. She is also involved in national curriculum work and geography textbook writing.*

*Christiane Ala-Nissilä is a history and social science teacher in Upper Secondary School Turun Suomalaisen Yhteiskoulun lukio. With long experience of practical work with students, she works as a pedagogical expert in the EU-funded Smart Learning Environments for the Future project for the Education Division of the City of Turku.*

*Joona Saari is the project coordinator of the start-up entitled Scandinarea. His passion is in developing an e-citizenship concept for the Nordic markets. He works as a research assistant for the University of Turku in multiple projects and is finishing his cultural studies with study of religion as his main subject.*

*Juuso Salminen is a project engineer of the EU-funded Smart Learning Environments for the Future project for Turku University of Applied Sciences. Working as a graphical artist at Turku Game Lab, he has vast experience related to different gamification, AR and VR implementations.*