



Digitalization and the use of educational games in project management teaching

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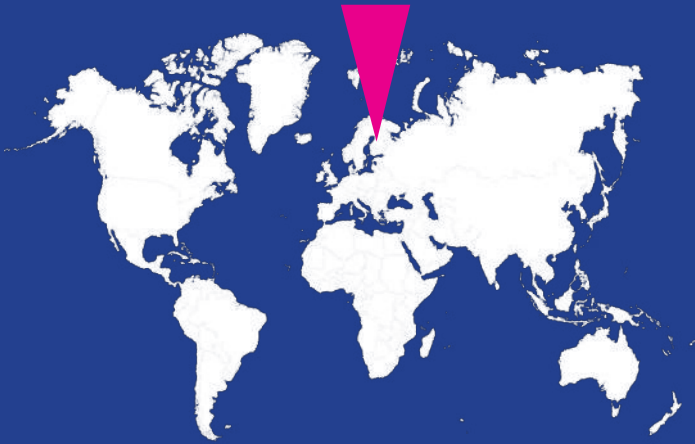
About me



- Associate Professor of Project Management and Complex Systems (tenure track) in University of Oulu since 2014
- Adjunct professor of Project Business at Aalto University
- Project Business research team leader
- My research focuses particularly on stakeholder engagement in complex projects, project governance, project alliances and on the renewal of project-based industries
- I teach both undergraduate and post-graduate project management courses



#unioulu #arcticattitude



University of Oulu founded

1958

Multidisciplinary research and education

Natural
Sciences and
Mathematics



Biosciences



Medicine
and Health



Economics
and Business
Administration



Engineering
and
Architecture



Information and
Communication
Technologies



Education



Humanities



60 000+

Alumni

13 500

Students

3 400

Staff



Agenda

- **Digitalization of project management education**
- **Digitalized solutions to facilitate PM learning from our team**
- **The development and use of educational games in project management teaching**

A woman in a colorful bikini and gloves stands in the ocean at night, smiling. Three yellow bars are positioned above her head, resembling a stylized sun or a graphic element. The background shows waves and a dark sky.

Why to digitalize?



***How can we improve our course design?
What can digitalization of education offer for us?***

1) Does our teaching support student motivation and engagement?

2) Do we utilize new ways of teaching and how?

3) Is it easy to offer our courses in other education channels and facilitate teaching collaboration nationally?

4) Do we support our students enough and does our offering meet their needs?



The digitalization journey of our Fundamentals of PM course

Gaining experience

Complete re-design

Continuous improvement

Online lecturing/Hybrid mode 2014-2016

Completely digitalized course (2017-2018)

Continuous development and focus on student engagement (2018-)

- Hybrid solutions: possibility to participate online or physically
- Lecture video recordings
- Learning management system (discussion forums)

- Re-design of the course content and implementation methods to meet online course's needs
- Lecture video production (university's studio) for asynchronous learning
- Moodle content planning
- Active online/tutoring support
 - Company videos

- Sharing videos, exercises and course content with other Finnish universities
- Focus in developing the online course identities and sense of belonging
- Audio book development
- Use of learning analytics

- Continuously offered online course for our university students
- Educational chatbot development
- Gamification of PM education and educational games



How can we improve our online course design?

TAKING PM EDUCATION TO THE NEXT LEVEL:

- 1) Does our course support different types of learning processes, flexibility and personalization of learning?**
- 2) How can we ensure continuous support in our online course?**
- 3) How can we facilitate interaction and improve student engagement in our online course?**
- 4) How can we utilize new technologies/solutions in our course development?**



EDUCATIONAL CHATBOTS (2020->)



EDUCATIONAL GAMES (2020->)



The use of educational games in PM learning



Gamified education and learning

GAMIFIED EDUCATION/LEARNING

GAMIFICATION OF EDUCATION

Game elements/
mechanics in use:

- Badges
- Points
- Levels
- Leaderboards
- Avatars/roles



GAME-BASED LEARNING

Games in use:

- Rules
- Feedback
- Goal/score/points
- Beginning and end
- Win/lose
- "artificial/narrative"

SERIOUS/
EDUCATIONAL
/LEARNING
GAMES



SIMULATION
GAMES

SIMULATION-BASED LEARNING

Simulative system in use:

- Rules
- Goals
- "simulation of real-life"



SIMULATIONS

(Loosely based on article: Gamified learning in higher education: A systematic review of the literature, 2018 by Sujit Subhash, Elizabeth A. Cudney*)



Mapping the use of educational games in PM field (PROVO research project 2021-2022)

- **22 university teachers interviewed**
- **Interview themes:**
 - What kind of online teaching methods and SW-tools have you used in your project management courses?
 - What are your experiences or expectations of using gamification methods and tools?
 - What could be done to improve the experiences of the gamification of education and use of educational games?
 - How do you see the future of educational PM games?
- **Online survey on the use of educational games**
- **Topics:**
 - The use of educational games/simulations
 - Willingness to use gamified teaching methods
 - Need for service and support
 - Pricing
 - Experiences and effect of using gamified teaching/educational games



Summary of the benefits and challenges

Benefits and challenges for students



- Students' interest to learning content and motivation increases
- Students learn the subject by doing, and through trial and error in a risk-free environment
- Students learn together and learn generic skills
- Students get a memorable learning experience



- Students' cognitive load and stress can be increased
- Students can get frustrated with the teaching method
- Students feel that gamified teaching is irrelevant or disconnected from the learning objectives

Benefits and challenges for teachers/educators



- Teachers get inspired and motivated
- Teachers can motivate and engage students with variable and versatile teaching methods
- Teachers have a method to teach and grade discipline based skills
- Teachers have a method to influence generic skills development



- Teachers need to do extra work to obtain, learn and teach the educational game
- Teachers have trouble to control or measure learning fairly
- Teachers face pedagogical problems when using the educational game
- Teachers face technical problems when using the educational game



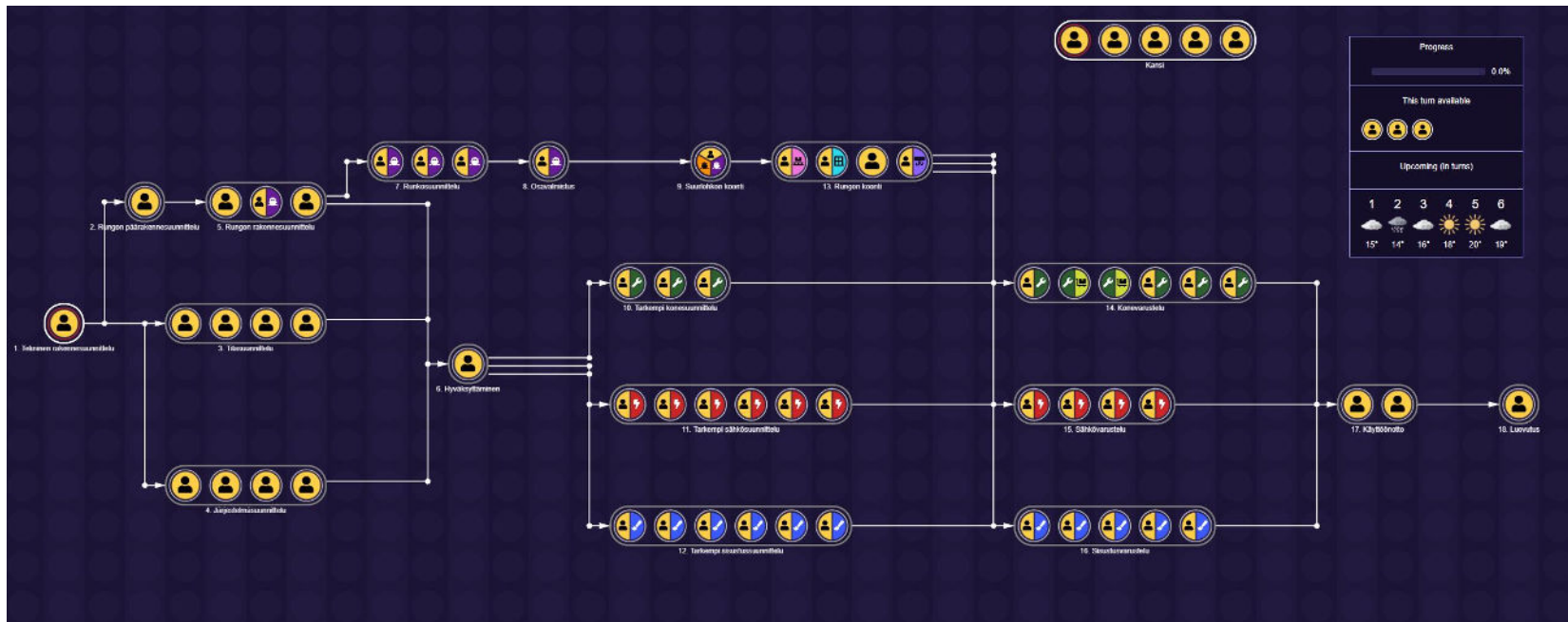
Expectations for the PM educational game development



- **More information on existing games and their potential should be available**
- There are a lot of games and service providers in the market
- **Educational games need to be easy-to-use, intuitive and reliable**
- **The connection of the educational game to the learning objectives is highly important**
- **Commercial educational games as a service/product preferred**
- **Universities interest to gamification of education**



The learning solution: Project business game



- Configurable gamified online learning solution platform
- Research-driven solution, user interface based on project activity network thinking
- Configurable platform for teachers and partners
- Tested in over 100 implementations with thousands of students

Game implementations

- **Nearly 100 different implementations globally**
- **Over 1.000 educators, learners, and professionals worldwide have tested and implemented our learning solutions**
- **The feedback from both educators and learners has been overwhelmingly positive and encouraging**





Developed learning solutions based on our research

1. Chemical factory investment project
2. Concurrent engineering
3. Project monitoring and control
4. Design and construction of a house
5. Design and implementation of production line
6. Project status tracking
7. Introduction to project schedule and resource management
8. Advanced project schedule and resource management
9. Sustainability management
10. Project portfolio management



Introduction to project schedule and resources management



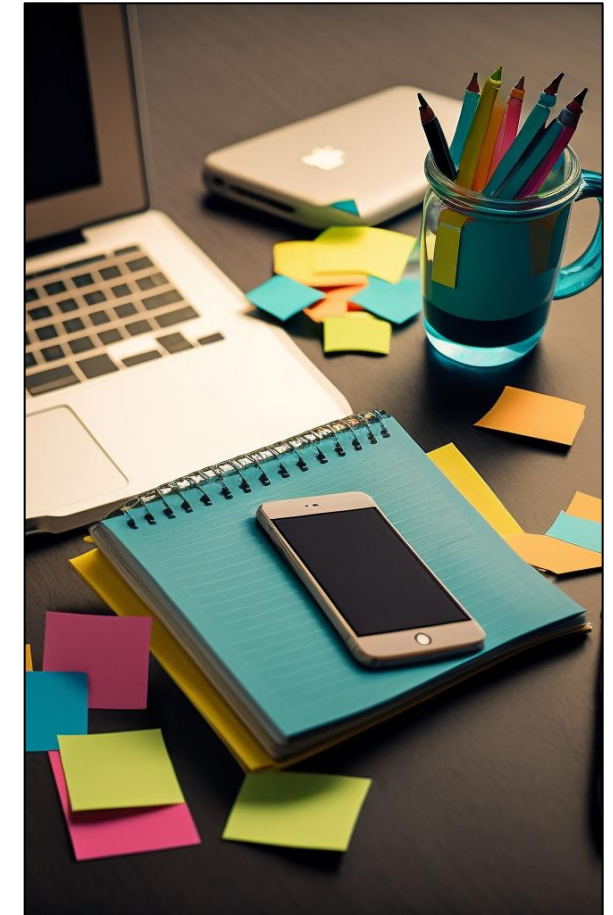
Concurrent engineering



Production line investment project



Building of a town house





User experiences

The game was a very good experience and it was running well. I don't have any complaints!

A good addition to the course, which concretized many of the learnings.

It is very nice as it shows the quick consequences of your decision which kind of build your mind in terms of project management

It was a really useful solution and I learned a lot. I could utilize the course learnings in the game, which was nice.

It was a nice way to learn and nice that we have different types of learning methods.

The game was engaging and facilitated my learning.

It taught me a lot of the management of uncertainty in projects

I became addicted to the game.

I liked the course and am happy about participating (so thank you), but, unfortunately, gaming is not my thing. I understand that this game might be beneficial for some students.

This simulation was the best one I've played!



Thank you!

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