



Co-funded by the  
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## UPSKILLS and educational games



L-Università  
ta' Malta

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# The UPSKILLS project

Funded as an Erasmus+ Strategic partnership

Consortium of 8 partners:



University of Malta ( coordinator)	University of Rijeka
University of Belgrade	+ Funding through Movetia
University of Bologna	University of Zurich
CLARIN ERIC	University of Geneva
University of Graz	

# Main aim

Tackle skills gaps and mismatches in students of language-related disciplines to create a better workforce.

## **Rationale:**

Linguistics/language graduated are needed in research and industry jobs

But sometimes lack transferable skills:

- critical thinking and problem solving
- knowledge of research design and data analysis
- project management
- digital skills

# How do we know?

UPSKILLS survey of business sectors hiring linguists and language graduates

(Gledić et al. 2021):

Attributes most in need of improvement among graduates of linguistics and languages degrees:

- Problem-solving
- Technical skills
- Organisational skills
- Communication skills
- Analytical skills
- Creativity
- Attention to detail
- Working under pressure

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## **How:**

- Innovative pedagogies such as online educational games
- Modular and blended learning
- Real-world applications (work-based learning)
- Integrating existing research and research infrastructures into teaching

# Main aim

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**This training  
event's focus**

## **How:**

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# Plan for this event

## **Today:**

Why educational games are important; Demonstrations and hands-on sessions which will allow participants to improve their understanding of how educational games work.

## **Tomorrow:**

Further hands-on sessions and a discussion across project partners on how to optimize their work on developing teaching materials and how to format their content to fit game software.



# Aim of this presentation

- types of educational games
- what sort of content is usually taught through educational games?
- what about gamification?

# But first... why games are the way to go

(Squire, K. Video Games and Learning: Teaching and Participatory Culture in the Digital Age; after Pleasant & Ritzhaupt' 2013 review)

- Games have a unique potential of teaching and learning unlike any other medium;
- Gameplay enables the intellectual and social growth of the participant over the long term and permeates into his or her learning repertoire;
- Game content, overlapping goals, continuous problem solving, social interactions and gaming cultures are critical aspects of learning through games.

=> students get to remain engaged, excited, interact, problem solve and learn at the same time.

# But first... why games are the way to go

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Games have been shown to spark interest-driven learning among students and teachers alike:

- they establish new interests that the student further explores and investigates;
- they inspire students to pursue questions and answers to developing questions while playing;
- they create an environment that leads to intrinsically motivated authoring.

# But first... why games are the way to go

(Tannahill N., Tissington P., & Senior C. (2012). Video games and higher education. Front. Psychology 3: 210)

Traditional lecturing:

Modular-based structure but is usually delivered “in big, ugly, rather unpleasant lumps” (Chatfield, 2010, p. 2) that presents a relatively limited picture of student progress.

Educational games (and gamification):

- Constantly and automatically assess the learner’s ability.
- Provide unique cognitive stimulation and motivation.

# Types of educational games

(Tannahill N., Tissington P., & Senior C. (2012). Video games and higher education. Front. Psychology 3: 210)

- A. Custom-made educational games (next session this morning)
  - allow for specialised learning through adapted contents to match specific learning objectives
  - teachers and game designers collaborate to tie the game to specific learning content and connect students with resources
  
- B. Commercial off the shelf games (this pm's session)
  - replete with effective constructivist teaching structures
  - teachers need to understand all aspects of the game and overtly tie it to specific learning objectives.

# Types of educational games

## A. Single-player games

- can help target transversal skills and lead, among other things to the student gaining confidence.

## B. Multiplayer games

- students collaborate in teams, each using a different, but overlapping, set of skills, and share knowledge, skills, and values with the others.

=> This creates distributed and dispersed knowledge within a group in ways that would please any contemporary high-tech, cross-functional-team-centered workplace [Wenger et al. 2002]. In this respect, games may be better sites for preparing workers for modern workplaces than traditional schools.

(Gee, J., P. (2003). What video games have to teach us about learning and literacy. (Book Overview). ACM Computers in Entertainment, 1:1)

# What to teach through games...

Anything really...

but perhaps more pertinently:

- Transversal skills: most games focus, among others, on problem solving and critical thinking, while some can also help create a sense of community.
- Games can be used to introduce a problem, by drawing a parallel from the real world to the game world. What is important here is that the lecturer makes the parallelism explicit.
- Immersion-based games can be used to create the illusion of a simulated environment (e.g. workplace) → more related to custom-based games.
- Games can make assessment more engaging...

# What about gamification?

Gamification ~~= the creation of (educational) games~~

→ incorporating dynamics associated with game design in the educational environment

Reasons to prefer gamification techniques:

- Learning exclusively through gameplay is very tricky (*'I came here to learn, not to play a game'*)
- UPSKILLS gameplay preference survey: 28.8% of respondents do not play games, and the majority only plays games casually.



# What about gamification?

Much like educational games, gamification has been shown to allow students to significantly develop their curricular, cognitive, and social competences

How?

- By making learning more engaging and, where applicable, fun too
- By contextualising learning in a setting where they learn by doing rather than just by listening to the lecturer
- By giving students a chance to develop their transversal skills through a combination of individual and collaborative engagement in tasks typically revolving around a storyline

# How to easily engage with gamification

A. By incorporating features of game design into a curriculum

e.g. In online learning environments:

- The ability to upload pictures / create avatars.
- A point system to mark achievements, coupled with completion badges.
- Clearly signposted progression stages with progress bars.
- If necessary, and decided by the content creator(s), a storyline for the whole module or leaderboards for competitive tasks.

# How to easily engage with gamification?

## B. By gamifying learning materials

Here one can select (or preferably combine) from the following strategies:

- Challenge-based gaming
  - Present a challenge or a problem that students will have to solve
- Immersion-based gaming
  - Create a storyline/narrative to engage students
- Social-based gaming
  - Have students engage in competition or collaboration

# How to move towards gamified learning...

Student-centered methods of learning are often bound to be met with resistance.

Why?

Student expectations, either from previous school experience, or about the manner in which a 'serious' academic subject should be taught.

→ Explain to the students that you are neither playing a game nor performing an experiment, but teaching in a way known to help students learn more and understand better.

(Barr, M. (2018). Student attitudes to games-based skills development: Learning from video games in higher education. *Computers in Human Behavior* 80: 283-294.)

# What students will gain

(Barr, M. (2018). Student attitudes to games-based skills development: Learning from video games in higher education. *Computers in Human Behavior* 80: 283-294.)

- improve communication skills

Gaming challenge is positively correlated with interdependence between players, suggesting that players increasingly work together in the face of increased in-game challenge.

- become more adaptable and resourceful

Upon graduation, students should either way demonstrate resilience, perseverance, and positivity in multi-tasking, dealing with change and meeting new challenges. Using games can have a positive effect in their appreciating real-work environments (and all that in a fun way).

Questions/comments?

# Day 2

## *Our commitments:*

- For some skills (e.g. problem solving) it will be more suitable to use educational games than others.
- Quality and effectiveness of the educational games (content selection, adaptation, usability, website development, best practices for educational games in teaching, and evaluation )
- The integration of content from other sources, in the incorporation of content into interactive educational games, and in a markedly research-oriented approach through both the educational games and the practical work that will feed into student projects.

# Plan of action

- Games are a relatively novel teaching mode that provides the student with the possibility to engage in situated experiences overcoming barriers related to physical, geographical and temporal boundaries. → Why games would preferably need to be online.
- Games also allow for interactive learning ... → We should allow for students to interact during games (perhaps discuss problems?)
- For lecturers, they provide the possibility to train students and give them materials in a modular fashion, also without having to be in the same room with the students at a given time. → Games could be incorporated (to some extent) as homework.
- In addition, it is possible to keep a log of decisions taken for a particular student, which gives lecturers access to data regarding their students at several points in time during their studies which can help them better tailor their materials to their students. → Feedback seems necessary for custom-made games. In summary,
- Although many games have been used in, for example, language learning, the use of games for **transferable skills** as part of the curriculum in language-related disciplines is still comparatively rare. → For this reason, a substantial effort as part of this intellectual output will be dedicated to creating guidelines on how to adapt the specified games by introducing novel content from different disciplines. (Bologna + UM)



# Plan of action

- One target group of this intellectual output are students in language-related disciplines, who will be training in transferable skills by means of educational games we will develop.
- The second are lecturers, who will be instructed on how to use games in their teachings and for whom we will write extensive manuals on how to populate an existing game with content they created. (guidelines + manuals for a custom-made game).
- Due to the flexible nature of the design of the educational games we envisage, the educational games can be populated with content from other fields as well.(e.g. UZH)... Our manuals will allow lecturers from other fields to use the games for their purposes.

# Task 4.1

1. Survey existing game-based practices
2. Select mini game scenarios that are appropriate for language/linguistics training with the use of digital interactive media.
3. Apply light adaptations (e.g. reskinning, concept additions) to games developed at the Institute of Digital Games with the support of multiple European (FP7, H2020) grants: these include games for creativity (FP7 C2Learn), games for teaching artificial intelligence (Erasmus+ LearnML), and games for cultural heritage (H2020 Crosscult). The games will be adapted to the scenarios of the project based on the user and technical requirements set by the objectives of UPSKILLS. (perhaps maze game?)

# Task 4.2

Based on the results from the needs analysis, and expertise in the UM team in educational games, determine what types of learning content are best taught through educational games. The time span and resources are far too limited to develop games from scratch. At the UM, the Institute of Linguistics and Language Technology in collaboration with the Institute of Digital Games adapt existing games to the novel learning tasks envisaged. We will be able to build on the expertise and experience of the members from the Institute of Digital Games to adapt existing games and turn these into novel learning instruments for the target group of students from language-related disciplines. Apart from selecting what types of content are most suitable for educational games and selecting existing games in order to adapt them to the new learning task (Overlap with step 3 from Task 4.1), content will have to be adapted to feature in the educational games. (Overlap with step 3 from Task 4.1)

# Task 4.3

- It is of high importance that the game platforms developed in this project can be used by lecturers from other institutions and other fields. → So, in task 4.3 we will develop detailed manuals for using the software and best practices for including educational games in teaching.
- Testing with a pool of lecturers in different language-related disciplines will be carried out at different stages in the development of the educational games and the accompanying manuals. This will make it possible to identify any obstacles that might hinder their integration in existing courses and tailoring the contents to users' needs. (Input from IO3).

# Task 4.3

- Apart from manuals that guide users in how to use the software, the partners will provide guidelines for the standardisation of the collection of best practices for the use of educational games in teaching. Such guidelines may include strategies for the data collection period, essential data to be collected and key observation points.
- Moreover, results from previously completed Erasmus+ projects, such as Game-based Learning to Alleviate Early School Leaving (GBL4ESL), Project Identifier: 2015-1-MT01-KA201-003717, and e-Crisis, Project Identifier: 2016-1-MT01-KA201-015221 will help guide the steps for determining the collection of best practices towards the completion of this task. (UM to gain access to these results)

# Task 4.4

- students' self-perceptions with respect to engagement and learning through games due to its expertise in the field of games and education (Lead UM) - UNIBO and UB will assist UM in recruiting higher education students for participation in data collection. UB will further assist UM in the analysis of the data gathered.
- For this task, a **mixed method of research** including qualitative data collection and analysis to gain deeper insights into the students' perceptions about learning and engagement through the use of games, and a more quantitative approach using surveys and content-based assessment will be carried out. Through these analyses, we will also be investigating the level of interaction the students achieve through the games and whether the game play leads to extending the engagement with learning to beyond the game itself. Through these insights we wish to explore whether playing games may lead to deeper impacts on learning, especially in the areas of language, where the students may choose to extend interactions and communication beyond the game.

# Multiplier event

In this multiplier event we will share our best practices, and manuals with our main target group: lecturers interested in using digital games for education. Our main target group is composed of lecturers at university, but we will advertise the event among teachers of other schools as well, in order to stimulate cross-sector fertilisation. Apart from disseminating our intellectual output, we would also use the opportunity to evaluate the quality of the output generated and the multiplier event itself. We will therefore run questionnaires with the participants at the beginning and end of the event, to check what they learnt and whether our materials are helpful. The event will kickstart a collaboration process, engaging local stakeholders in the co-design of new game content and (primarily) in new uses of existing technologies, applications and games in the lecture room. Educators' personal experience and educational context will allow both the consortium and the educator to find the best format for integrating the games into their lectures.

The extensive experience of UM in engaging and training educators in the use of digital technologies and games will be exploited to maximise the impact and dissemination of the pedagogical methods and digital technologies developed or collected by UPSKILLS.

# Input per team

- **IO3 partners:** To decide on whether they want to be part of the adaptation of custom-made games, depending on their content. To provide content for games.
  - Otherwise provide content for gamification (e.g. quizzes...)
- **UB:** to lead the gamification effort, primarily on Moodle but also through a list of suggestions. Also, play a role in the organisation of the feedback
- **UNIBO:** To collaborate on best practices and take care of the manuals
- **UM:** All the rest.



# What to keep in mind

Apart from coming up with interesting/fun activities that could be further gamified, we always need to:

- Make sure that the activity at hand serves some learning goal.
- Provide specific and understandable instructions, including achievement indicators and how long the game should last.
- Think about ways in which feedback should be provided; e.g. (perhaps automatic) feedback upon completion of the 'game' or moderated peer-discussion.

# Tips for when you prepare content

In order to help out with the eventual gamification, while you are adapting/developing learning materials, you should:

- Think about particular tasks or activities that could be amenable to gamification, even if you don't have a specific idea about how to actually gamify them.
- Do not overdo it with games. We need to keep track of our learning goals, and simpler (interactive) tasks will be essential for this too.
- Unless you have an overarching storyline, do not overcomplicate your activities; provide detailed instructions and allow space for feedback in your plan.

# Tips for when you prepare content

Practical pointers about how gamification could be achieved:

- A storyline or narrative that would help students understand why what they are learning is useful (e.g. simulating a work or research environment)
- Games that are repeated with different levels of difficulty.
- Think about ways in which you could make learning more fun.

Potential elements that may eventually be used:

Avatars, Badges, Challenges, Character upgrades, Customization, Difficulty levels, Experience points, Frequent feedback, Goals, Immediate feedback, In-game rewards, Leaderboard, Onboarding, Peer interaction and collaboration, Peer motivation, Points, Prizes, Progress bars, Rewards, Storyline, Storytelling, Scoreboard, Unlockable content, Visual elements