



Erasmus+

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Classification of Learning Mechanics

Games-Based Learning & Gamification in 3D Virtual Learning Environments

QUESTLINE OVERVIEW



Classification of Learning Mechanics

Quest	Task
Action / Task	Study
Educational Tutorial	Study
Demonstration	Study
Assessment / Feedback	Study
Reflect / Discuss	Study
Level	6
Challenge	Choose 2 Learning Mechanics and provide a brief description of an educational intervention in a 3D Virtual Learning Environment.
Boss Fight	Quiz-Based Game
Experience Points	400
Achievement	Learning The Ropes

QUESTLINE DESCRIPTION



Highlights

- ✓ “Learning Mechanics are patterns of behaviour or building blocks of learner interactivity, which may be a single action or a set of interrelated actions that form the essential learning activity that is repeated throughout a game.”
- ✓ Their key principles are grounded on established learning theories or models and constitute the medium that ‘translates’ the learning goals into gameplay elements.
- ✓ Every educational game has Learning Mechanics that govern the rules and the interplay modalities used to motivate and engage players to complete the game and ultimately expand their knowledge and/or develop their skills.
- ✓ In this questline we map and discuss the key-elements of the most widely adopted learning mechanisms that can be utilised across different educational levels and contexts.

ACTION / TASK



Informational

- ✓ In digital learning scenarios students are expected to perform a set of repetitive actions in order to complete the given tasks.
- ✓ Educational games framed under this category are mainly relying on the principles of Problem-Based or Task-Based Learning whereas, in cases where the students are required to work together to achieve a common goal, it could also be related to Collaborative Learning.
- ✓ Depending on the nature of the educational task students can develop a wide range of cognitive, technical or social skills.
- ✓ Educational activities associated with this mechanic include role-playing, paired/group discussions, exploration, and observation and other 'hands-on' activities.

EDUCATIONAL TUTORIAL



Informational

- ✓ Educational tutorials are instructor-guided and/or self-paced activities that enable learners to acquire theoretical knowledge or consolidate their practical skills.
- ✓ They draw from the principles of the Constructivist / Constructionist models and occasionally involve collaboration among students.
- ✓ Depending on the nature of the educational subject, they can be discussion-based, where the focus is on the deeper exploration of the course content through discussions and debates, or may involve hands-on activities, where the emphasis is on the development of practical skills.
- ✓ In either case, the added-value of this approach is also on the opportunity offered to learners to participate knowledge and skills in (follow-up) questions and answers sessions.
- ✓ For the integration of this mechanic, the use of diverse multimedia resources is recommended (e.g., PowerPoint slides, videos).

DEMONSTRATION



Informational

- ✓ 3D Virtual Learning Environments enable educators to demonstrate abstract topics and concepts that are difficult or even impossible to be explored in the conventional classroom.
- ✓ Educational games framed under this category are mainly relying on:
 - ✓ the principles of Behaviourism, when simulating scenarios that highlight the relationships between 'cause and effect'.
 - ✓ the Experiential Learning approach, when the students are requested to observe and imitate the actions that the educator in charge performs.
 - ✓ the Social Learning theory, when the educational activities involve interplay between the students
- ✓ Educational activities associated with this mechanic include simulations, 3D modeling and programming, scenario-based virtual field trips, and guided explorations via storytelling.

ASSESSMENT



Informational

- ✓ Beyond the conduct of activities that facilitate learning, designers and practitioners can also integrate assessment related tasks as a means to enable learners acquire insights related to their learning progress and advancement.
- ✓ In Serious Games, learner assessment can be continuous (e.g., proceeding from level to level), with scaffolding difficulty (e.g., completing more demanding tasks), and stealth (i.e., embedded in the gamified activities).
- ✓ These elements ensure that the experience of flow remains unaffected while also allowing educators to obtain useful information related to learners' knowledge and skills construction.
- ✓ A typical approach to facilitate assessment in digital learning environments is by capturing, recording, and extracting learners' behaviours through the user (digital) logs.

FEEDBACK



Informational

- ✓ Following completion of an assignment unit it is important to also consider the provision of feedback.
- ✓ In the context of gamified activities in 3D Virtual Worlds, feedback can be provided both during (e.g., failure/replay, provision of hints/help) and after the game (e.g., reflection moments, watching others playing, review of recent activity).
- ✓ The nature of the feedback can take multiple forms (e.g., text, audiovisual) and can be used either in isolation or as a combination.

REFLECT / DISCUSS



Informational

- ✓ Following completion of the educational tasks, educators need to provide opportunities for critical reflection and discussion.
- ✓ As a process, it can take place outside the game context (debriefing) and may include reflective diaries, mentoring, and game critique.
- ✓ Beside the direct benefits that this process has for learners, it also enables instructional designers to evaluate whether the choice of games met students' motivation and interest, the particular elements they liked more and the aspects of the games that challenged them the most, as well as how they managed to overcome the presented challenges.
- ✓ Discussion-based, group-oriented or peer-to-peer, reflection can be carried out with more advanced learners based on a set of predefined guidelines.