Gamification

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Outline

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- What is Gamification?

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- Levels of Game Design Elements

- Most Used Gamification Principles

- Gamification in SEP-CyLE

- Theoretical Framework

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Early work on Gamification

Thomas W. Malone (1981) asked the following questions:

- Why are computer games so captivating?

- How can the features that make games captivating be used to make learning, especially learning with computers, interesting and enjoyable?

- After reviewing the various theories and conducting 3 studies he concluded that "If students are **intrinsically motivated** to learn something, they spend more time and effort learning, feel better about what they learn, and use it more in the future".

Early work on Gamification cont

– Malone developed a theory of intrinsically motivating instruction that consists of three key elements:

- *Challenge* – goal, uncertain outcome, toys vs. tools, self-esteem

- *Fantasy* – intrinsic and extrinsic, cognitive aspects, emotional aspects

- *Curiosity* – sensory (audio and visual effects), cognitive (good form, informative feedback)

What is a Gamification?

- *Gamification involves applying elements of "gamefulness, gameful interaction and gameful design" with a specific interaction in mind.* (Deterding et al. 2011)

    - *Gamefulness* (ludus) refers to the qualities of gaming (captures playing structured by rules and competitive strife toward goals)

    - *Gameful interaction* refers to the objects, tools and contexts that bring about the experience of gamefulness

    - *Gameful design* refers to the practice of crafting a gameful experience

What is a Gamification? cont

- Playfulness (paidia) refers to the experiential and behavioral qualities of playing (a more freeform, expressive, improvisational, even "tumultuous" recombination of behaviors and meanings)

- Gamification focuses on extrinsic motivation while gameful design focuses intrinsic motivations

  - *Extrinsic motivation* – where external rewards such as money or status are offered in exchange for engagement in particular behaviors or activities

  - *Intrinsic motivation* – where a behavior is enacted or an activity is undertaken because it aligns with one's inner values

What is a Gamification? cont

- Gamification in **education** has been referred to as digital game-based learning (DGBL) and serious games. Defn: the use of "game-based mechanics, esthetics and game thinking to engage people, motivate action, promote learning, and solve problems (Kapp 2012)

Terminology

- *Serious Games* - any form of interactive computer-based game software for one or multiple players to be used on any platform and that has been developed with the intention to be more than entertainment (Military => Education and Business).

- *Serious Gaming* – encompasses any (educational) utilization of the broader ecology of games, e.g., all of the technologies, practices, literacies and social processes surrounding games.

Terminology cont.

- *Games with a purpose* - reflect an approach in which problems that cannot satisfactorily be solved with information systems are transformed, so that human individuals can solve them in a game-like fashion

- *Pervasive Games* - games that have "one or more salient features that expand the contractual magic circle of play spatially, temporally, or socially", e.g., location-based games that take gameplay into the public space, augmented reality games that use digital devices to overlay game representations over the environment

Most terms taken from *Deterding et al. 2011 Detering 2015*.

Taxonomy of game design elements by level of abstraction

Level	Description	Example
Game interface design patterns	Common, successful interaction design components and design solutions for a known problem in a context, including prototypical implementations	Badge, leaderboard, level
Game design patterns and mechanics	Commonly reoccurring parts of the design of a game that concern gameplay	Time constraint, limited resources, turns
Game design principles and heuristics	Evaluative guidelines to approach a design problem or analyze a given design solution	Enduring play, clear goals, variety of game styles

Taxonomy of game design elements by level of abstraction cont

Level	Description	Example
Game models	Conceptual models of the components of games or game experience	Mechanics–Dynamics–Esthetics (MDA); challenge, fantasy, curiosity; game design atoms; Core Elements of the Gaming Experience (CEGE)
Game design methods	Game design-specific practices and processes	Playtesting, playcentric design, value conscious game design

Most Used Gamification Principles

- Based on the study by Dicheva et al. (2015) the most used gamification design principles in an educational context are:
  - Visual status
  - Social engagement
  - Freedom of choice
  - Freedom to fail
  - Rapid feedback

How Gamification is Used in SEP-CyLE?

- Gamification based mainly on
  - a reward system – virtual points assigned based on individual and team activities
  - status – leader board shows the top five students in the class
- Virtual points awarded based on
  - Individual
    - completing DLOs (includes problem-based learning)
    - viewing tutorials
    - posting to class forum (social engagement)
    - updating user profile (social engagement)

How Gamification is Used in SEP-CyLE? cont

- Virtual points awarded based on
  - Collaborative
    - completing DLOs as a team
    - posting content to help the class or community (social engagement)
- Progress bars
  - shows students their progress in reaching a goal
  - helps to motivate or give them a push if they are falling behind
  - encourage students to reach their goal if they are close to it

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Summary

- Briefly review early work on gamification

- Defined the term gamification

- Reviewed terminology

- Described taxonomy of game design elements

- Described how gamification is used in SEP-CyLE

- Introduced initial version of LESs framework