

Chapter 1.13

Principles of Educational Digital Game Structure for Classroom Settings

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ABSTRACT

The scope of learning with games is determined by their genre, characteristics and scenarios, or content. Therefore, the frame of a game containing its type and content somewhat confines the activities of players to learn and to play. Game-based learning adopts much of the same interactional techniques that have been used in traditional instruction. Learning with games includes activities such as ‘learning by practice and feedback’, ‘learning by doing’, ‘learning by making mistakes’, ‘learning by discovery’, and ‘learning by role playing’. Games are adopted for classroom based learning to motivate students, to support main curricular activities, to strengthen what is

learned, and to summarize and evaluate what is learned. There is no straightforward guideline on how to use a game effectively in classroom settings. However, the instruction for teaching and learning with games needs to be designed before any other actions are taken.

INTRODUCTION

In order to use games for learning, the game structure and activities of players need to be given careful consideration. Among many characteristics of gaming, context, immersion, and interaction are the main factors which educators must focus on when using games in classrooms.

The situation or context in which a game resides is an environment in which learning and gaming

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happens simultaneously. It provides players with a sense of reality for their activities. Immersion leads players to experience “flow” in gaming. Thus it contributes toward a player’s active learning. Also, it empowers learners by motivating them to learn. Interaction is an important factor because it is fundamental to gaming as well as to learning. Meaningful learning with a game is possible based on interactions just as learning in general is made possible through effective interactions. Learning with games, which is characterized by combining fun and learning, thus tries to achieve given objectives based on immersion, interaction, and context.

Games are not a shortcut for inducing effective learning. Rather, games require the creativity of teachers and learners to find the best usage for their current situation. To find out what kinds of application types and game activities are meaningful in classroom settings, the internal structures of games and the activities of players learning with games must be explored as those are what affect the learning processes of game based activities.

Internal Structures of Game

The scope of learning with games is determined by their genre, characteristics and scenarios, or content. Therefore, the frame of a game containing its type and content somewhat confines the activities of players to learn and to play.

1) **Intrinsic vs. Extrinsic.** The distinction between intrinsic and extrinsic games is whether the learning scenario and the game scenario are separate or integrated. Malone (1980) asserted that learning games are categorized as either intrinsic or extrinsic. He contends that the learning content of an intrinsic game is integrated with the framework of the game. Most simulation games are examples of intrinsic games. On the other hand, an extrinsic game has a separate or less integrated scenario with the learning

content. In this type of game, learning and gaming are independent activities and gaming remains unchanged when the learning content is replaced.

In sum, these two types of games have their own values. For certain topics of learning, intrinsic games are more effective than extrinsic games. On the other hand, extrinsic games are economical in that they can be developed separately and maintained with ease because their learning content can be replaced without modifying the game framework.

2) **Template vs. Custom Designed.** This distinction is based on the game framework. A template-based game is composed of several steps or assembled modules. Most games of this type are developed using authoring tools. On the other hand, custom designed games are developed as a whole unit. This distinction is not based on the development method but on the structure of a game. A game structured into compartments supports various activities and topics of learning. Each module of the game can have a distinctive objective of learning which support various or stepwise activities. A custom designed game is more tightly interwoven and supports comparatively long term objectives of learning. In a sense, instructors can control more of the content in the learning path for the players in a template based game, while it is very difficult for the instructors to control the content and learning paths in a custom-built internally interwoven game.

3) **Reflection vs. Action.** For teaching and learning with games, the scope of a player’s reflective thinking should be taken into consideration as an important indicator of a player’s quality of learning. The player’s thinking and tactics are important internal processes of learning, and some games require less thinking than action. Action

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