Chapter 19
Exploring the Impact of Free-Form and Structured Digital Games on the Player Experience of Kindergarten and Primary School Students

Sotiris Kirginas
University of Athens, Greece

Dimitris Gouscos
University of Athens, Greece

ABSTRACT

The paper presents results of a study that was focused on testing the hypothesis that the levels of kindergarten and primary school students' positive emotions, engagement and positive experience will be significantly different while they play free-form and structured digital games. In the context of this study, students' emotion, engagement and experience were assessed through three corresponding questionnaires drawn from the literature. These questionnaires were completed for approx. 500 students of public kindergartens and primary schools located in Athens, Greece. From the analysis of the data collected, free-form digital games are found to lead students towards more positive emotions, higher engagement and more positive player experience. On top of that, a significant correlation is found between positive emotions, engagement and positive experience; the more positive the students' emotion while playing digital games, the higher appears to be their engagement and positive player experience.

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INTRODUCTORY REMARKS

The work described in this paper forms part of a broader research effort which aims at:

1. Formalizing a concept of game structure, and be able to evaluate its presence/absence in different digital games; more specifically, the research aims at the formalization and, eventually, at the quantitative assessment of a concept of game structure in free-form and structured digital games, through representing the gameplay flow and states on diagrammatic formalisms such as State Transition Diagrams, and trying to arrive at typologies that will allow to place different digital games at various points on an axis between free creativity and rule-bound complexity
2. Formalizing a concept of player engagement in digital games and be able to evaluate the engagement produced by different digital games for kindergarten and primary school players; in this respect, and with a view to exploiting the knowledge already available in this area, the research aims at being able to assess player engagement using a variety of available tools such as observation and questionnaires and emerging approaches such as facial expression recognition or bio-feedback analysis
3. Exploring correlations between game structure and player engagement of preschool and primary school children, and find optimal relationships between these two variables; with a view to integrating digital games in educational settings, the research aims to identify if there are significant correlations between the quality of players' engagement and the kind of play that a digital game offers, depending on whether the latter focuses on the game dimension (structured games) or the play dimension (free-from games) of gameplay
4. Exploring the elements of game mechanics that digital games should have in order to exhibit a game structure that leads to optimal player engagement; the research intends, on the long term, to develop and validate a heuristic framework for designing optimally structured, and thus more engaging, digital games
5. Selecting and/or designing digital games for language learning for preschool and primary school children that exhibit this optimal game structure; the research aims at arriving, on the long run, to formulate and evaluate guidelines for selecting and/or designing digital games for learning which can exhibit an optimal structure and thus lead to an optimal engagement
6. Studying the learning outcomes of preschool and primary school children on language learning while playing these digital games, with a view to exploring and maximising the effectiveness of free-form and structured digital games for language learning.

BACKGROUND CONCEPTS AND RESEARCH

Player Emotion, Player Engagement, and Player Experience

Although the experience of playing digital games has been the focus of many theoretical and empirical studies, the concepts of engagement and player experience are still not well understood. Due to the lack of commonly accepted definitions of these concepts (Nacke et al. 2009; Bouvier et al. 2013), it is necessary to clearly define them.

The single most important factor that makes a digital game successful is the quality of players' experience. A digital game should be fun, challenging and exciting in order to provide the best gaming experience and produce positive emotions within the player. This player experience can be