Student Usability in Educational Software and Games:

Improving Experiences

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Foreword

There is no doubt. Games are a powerful resource for learning. Prensky, Gee, Connolly, Piaget, and the other usual suspects on games cannot be wrong. Neither can all of the European projects funded under the large umbrella of Game-Based Learning, as well as the billion users across the world who enjoy, interact, have fun, achieve milestones and competences, improve their performance, collaborate, discuss, take initiative, and a long list of actions and benefits usually associated to gaming. eGames are attractive, addictive, and fashionable and elicit emotional reactions in players, such as wonder, the feeling of power, or even aggression. These features lead to engagement, and engagement and educational goals can mutually support each other in the same environment to achieve specific targets. In addition, they can also support rather accurate episodes of history, real systems, complex popular events, or board games, just to mention a few. With eGames, the users can also learn content, research in human relationships, improve personal and social skills, and work on strategies. Indeed, games have the power of engaging people. They are fun and provide interaction, interactivity, problem solving, story and other elements that give the user involvement, structure, motivation, and creativity, among other benefits.

Furthermore, games allow players to experience, to explore, to improve skills, to learn content, and to practice strategy. According to the literature, a digital game is a game played in an electronic platform fulfilling the following features: a) it is a voluntary action, started and completed by the user as he wants; b) it is also imaginary, parallel to the real world, replicating a universe or an activity without any consequence in real life; c) it is limited, in time and space; d) it follows a set of rules, a specific and private framework; and e) it provides an uncertain solution since every run, every play, is different and depends on unpredictable user behaviour. Beyond these generic features, educational games exhibit additional characteristics: a) an educational game starts with a premise to be solved; b) being unproductive, it does not generate any property or wealth; c) the main drive is the gaming activity itself; d) there is at least one right solution; and e) the user/player learns a skill or attains a competence, introducing new knowledge, fixing previous acquired knowledge, training skills, sharing experiences, discovering new concepts, developing outcomes.

In this context, gaming and learning become a perfect couple. In order to achieve educational goals, the game designer/teacher can use a number of interactive learning techniques, fully in connection with games. Through eGames, the player can use several interactive learning techniques, i.e. learning by doing, learning from mistakes, goal-oriented learning, role-playing, collaborative learning, and constructivist learning. An implementation of these techniques within a game could be used to support personalization, interaction, playability, and accessibility.

On the other hand, the use of educational games within lesson plans is a widely extended practice within the community of teachers. They interlace specific content and skills with a user-friendly en-

vironment where the student is able to play, try, get wrong and right, and learn. In this sense, digital generic games and simulations have a wider and more assorted approach to learning and interaction than specific eGames, since they produce didactical worth, if they are used in the right context by practitioners. Therefore, game-based learning can be deployed not only by educational software but any generic software applied with educational purposes and context. The possibility of re-purposing this kind of existing generic game and simulation in a didactical scenario and providing new pedagogical uses to them becomes a challenge and a need if we talk about virtual learning environments and practical daily experiences by teachers.

Indeed, there is a growing interest in the field of educational technologies, learning designers, and teachers in using eGames and educational simulations as a part of their regular programmes and lessons. However, the use of these resources is usually isolated from the rest of the learning experience. In face-to-face educational settings, this gap can be closed thanks to the teacher, who elicits reflection and supports the students to make connections between the game and the other resources. However, if we want to introduce games in online education, we need to take alternative approaches to fill this gap, like standards, patterns, and rich media. The main concern is to make the game another part of the process, fully integrated in the user experience, and to not let it remain as an unconnected resource. In this sense, achieving standardization, patterns, and rich media allows for the re-use and re-integration of educational resources like eGames in virtual learning environments.

This book compiles a selected number of well-written articles, which address usability in games as one of the main topics, as supported by "Section 1: Usability, Accessibility, and Playability in Virtual Learning Environments and Serious Games." In educational games there is much concern about usability. Since interaction with users, and between them, seems to be crucial for achieving a healthy and satisfactory user experience, usability is a top issue when a work-team designs a game. From the napkin mock-up to the final release, usability plays a central role. Every single aspect of the game must serve an utmost purpose. Every required skill to make a great idea comes true, must be elaborated, refined, double-checked, and integrated into the global project. From programming to graphic design, from a smart script to a captivating soundtrack, games must engage the final user and make him dive into the magic. In this context, usability becomes the key work to make all flow smoothly. Without usability, no word, comment, drawing, or background is useful. Usability becomes the connection link between all of them, since the nature of a game is to be played by a user. Without usability, the user does not get the message, does not play the script, and does not engage.

In addition to usability, other factors make interaction one of the strongest issues in any game. These are trust, social gaming, adaptation, and attraction. All of them are broadly described in "Section 2: Human and Social Factors in Game-Based Learning." Indeed, to adapt the user experience of a game to every user, it is as needed as designing individualised learning itineraries, so that everyone gets a unique relation with the game; in doing so, every student achieves personal goals based on a number of factors, i.e. records, behaviour, background, and others. In this sense, trust becomes the master line to elicit an active response from the user, e.g. a learner, especially in social gaming. Based on social exchange theory, there are four main incentive mechanisms to make users socialize and interact in communities of practice, social collaboration, and virtual learning environments: personal access, personal reputation, social altruism, and tangible rewards. All of them lean on trust as the main seed to support personal interaction.

Finally, the book provides a sound selection of "Experiences and Uses of Educational Videogames in Different Contexts," Section 3. These interesting and well-constructed experiences come from 3D edu-

cational mobile gaming, learning grammar, and role-playing or virtual worlds, to name a few. All these are practical examples of successful implementations, which combine a strong theoretical background on education and game-base learning with a fine design and development to cope with specific problems.

This book, edited by Dr. Carina Soledad González González from University of La Laguna and well provisioned by the selected authors, provides a fresh reflection on today's current development on educational software and games, based on specific experiences. I hope that the user experience with the book leads to, at least, a user experience on an implemented game in the right context. It does not matter if we play as teachers of students: in games, as well as in learning, we all are users and learners in a different step of our personalised learning process.

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