

Chapter 8

Social Interactive Systems Design for Serious Games

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ABSTRACT

Based on the importance of social aspects for the learning process and for Digital Natives, this chapter describes a framework to create sociality inside learning environments and in particular in serious games. The described framework is based on four elements: identity, space, time, and actions. These elements (and the behaviors that emerge from them) can be used as markers in order to evaluate whether or not the system is able to facilitate social interactions. The chapter describes in particular (1) the framework for the creation of sociability in interactive systems, (2) two methods for its application in the design phase and in the development phase, (3) two experiments carried out in order to validate the above mentioned framework using a serious game called School Society, and (4) some observations on the framework and the relationship between social and learning aspects.

INTRODUCTION

A learning environment can be defined as a context of structured activities, *intentionally* set up, where the learning process takes place. Based on this concept of learning *process* the learning environment could be also defined as a *space for action* designed to stimulate and support the building of knowledge, skills, motivation, and

attitudes. In this *space for action*, exchanges and interactions occur between students, teachers and the objects of knowledge basing on common goals and interests. The role and the importance of sociality (peer to peer or structured exchanges) for learning purposes in learning environments has been investigated by several authors (from Piaget, Vygotskij, Wersch, to Lewin, Dewey, Rogers, Goleman). For these authors internal

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factors of the individual (knowledge, emotions, representations, ratings), as well as external stimuli (cognitive conflicts, situated learning, cooperative actions) are reasons for the action. In our previous definition, the learning process structures a *space for action* in which social aspects also have to be taken into account. In the *social space for action*, students have the opportunity to have meaningful experiences in the cognitive, affective/emotional, interpersonal/social plan. For these reasons, it is important to create environments able to integrate social aspects in the learning process even when the learning environment is a “virtual” one.

Moreover, current learning environments have to meet the demands of the current generation of young people, the so-called Digital Natives. The term Digital Natives is used here to refer to the current generation of youngster, i.e. people born during or after the general introduction of digital technology who, interacting with digital technology from an early age, have a greater understanding of its concepts. This generation has different needs from previous ones because they have never been exposed to previous ways of interaction. As we will see in the following section for this generation, the role of sociality in virtual environments is taken for granted. Acceptance of a new tool, whether it be for entertainment purposes or for learning purposes, is strictly linked to its level of sociality (see Section “Digital Natives and Their Needs”). An application that fails to present familiar “social” features at the very least would be considered as backward and may be rejected. Therefore, the importance of social aspects for learning purposes interconnects with the importance of social aspects for the current generation.

This chapter presents a framework for building Social Interactive Systems (SIS) addressing the needs of Digital Natives. This means that the focus of this chapter will be more on the integration of social aspects in learning environments than on the effectiveness of the learning aspects.

The framework tested in the experiments described in this chapter is based on four elements:

identity, space, time, and actions. These elements were the result of a detailed analysis of social software used by Digital Natives (see Section “The Framework: Defining ‘Indicators’ for Social Presence”). In order to test the framework we used a serious game (i.e. a game with a primary purpose other than pure entertainment) called School Society for two experiments. In short, School Society is a virtual world inhabited by avatars representing the students. The aim of the game is to become the best student (i.e. the best ranked student) in this virtual world (see Section “The Framework and Serious Games as Learning Environment”). School Society was conceived on the basis of the framework and developed specifically for the experiments.

For the first experiment described in this chapter, we focused on applying the framework to create an early evaluation for a designed application (i.e. an evaluation before starting the development, see Section “Defining an Application ‘Expected Profile’”) and evaluated the ease of use of such a method. The second experiment was carried out after the development of School Society in order to demonstrate that the absence of one of the elements of the framework could considerably influence the use and the acceptance of the application. The main idea behind the two experiments was to compare the early evaluation of potential sociability with the actual application in order to understand if they are really linked (see Section “General Discussion”).

The rest of this chapter is structured as follows. The next section will deal with current generation and their use of ‘new’ technologies highlighting the importance of games in Digital Natives’ lives. The chapter will then describe the framework for the creation of Social Interactive Systems (hereafter SIS) whose intended target is the current generation of young people, the so-called Digital Natives. The following sections will describe different methods using the framework in the design and post-design phase of an application in order to evaluate its sociability. The serious game cre-

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