

Learning to Teach Sports to Handicapped People using Games

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Abstract

Nowadays most universities use different distance learning environments. However in the educational process besides forums, chats and other collaborative possibilities the content of the subject matter to be taught is normally done using static file formats. Specific Learning games can improve the student experience by enhancing motivation and interest in the subject. In this paper we present a learning game aimed at adapting the teaching of sports to handicapped people. The experiments show how the learning experience of the students can be improved using our simulator tool.

1. Introduction

Some subjects need additional training besides that which can be found in books, for example, in sports teaching with handicapped people. In order to educate teachers in these issues, the Sports Institute of Andalusia (Instituto Andaluz del Deporte) in Spain developed a course entitled “Sports technician in Physical Activities for handicapped”. The organizers considered after teaching some courses that a tool was necessary to improve the course content. The objective was for this tool to help students to practice the theory in a motivating environment. For this task, the educational game evaluated in this paper was developed.

2. The Game

Our game is integrated in MOODLE (<http://moodle.org>) a Course Management System (CMS) used in universities and educational centers. MOODLE provides different tools that help the deployment of courses with a rich array of support tools such as forums, surveys, chats, wikis, etc. The theoretical content of the course is included in this platform and the game is available as part of the course. Different levels of the game can only be reached when the relevant theoretical part has been assimilated first. The game is developed as a flash application that can be used with any web browser. The integration with MOODLE allows observers to survey the user activities because it detects

the users’ accounts and keeps information on their profiles. The user profile in the game is a student model containing information about the user interactions and his/her knowledge about each subject of the course. This game can be used by teachers to evaluate the students’ abilities and achievements of the goals of the course. The game (a presentation video can be seen in [1]) is divided into the same three categories as the type of students taking the course: 1) the physically handicapped 2) the sensorial handicapped and 3) the psychically handicapped. The game is about two friends who are playing basketball; one of them had a car accident and thinks he will no longer be able to do any kind of sport. His friend is also doing our course and will help the disabled player to see the life in a different way...

3. Evaluation

In order to test the improvements that the game has contributed to the learning process, we prepared a questionnaire, which was given to a group of 18 students on completion of the course. We design a questionnaire composed by 15 questions which could help us to evaluate different aspects of the game such as: Motivation, Enjoyment, Learning, Suitability and Usability (see [2] for a summary of game’s features which should be evaluated in order to obtain effective instruction with games).

3.1. Motivation

An interesting factor if we want a game to succeed (independently of whether it is an educational game) is the motivation of the player. This is even more important in learning games because usually students would not choose to play this game freely especially if it is part of the coursework. We have divided this aspect into three different areas addressing the degree of interest of the game, the desire to see new levels and evaluating the interest in a shared hall of fame which would allow users to compete with each other. We have observed in previous experiments with other learning games [3] that some students need to compare themselves with their colleagues to see who is the best. From the responses to these questions we ascertained that the students found the game very interesting. Of the total who voted, 56% voted 5 (extremely interesting) and the other 44% voted 4 (very

interesting). Another of our hypotheses was that if players could see all the levels from the very beginning, a lot of interest was lost, because no extra effort would be required to see new parts of the game and therefore there would be no motivation to discover what the next level contained. This would cause users to tire quickly of the game. Our game however offers players a new level only when they have achieved certain results. This has been a good strategy since 89% of the users were motivated to see what the new levels would be.

3.2. Enjoyment

During the design and development of the game we had two main goals: the first was for students to reinforce their learning by playing and the second was for it to be fun. For these reasons, results are pleasing because 83% of the users declared that they had enjoyed the game. The funniest part of the game was the *Circuit*, which was also the part where the students learned most as explained in next section.

3.3. Learning

There are two questions related to the learning as a result of using the game. The first one is about the preference of learning methods, related with the part of the game where they learned most. Interestingly we found a large correlation between their preferences about the best part of the game and the part where they learned most. 37% of students have considered that big games such as the *Circuit*, where different activities are involved with a goal to achieve, are more interesting than other activities like *Word Puzzles*. The second question, also related to the suitability, is about the necessity of the game as a learning aid, an assertion which most students agreed with (94% voted 4 or 5).

3.4. Suitability

The students' answers in the questions related with this aspect were unanimous: 100% expressed the opinion that this kind of game would be very interesting in other courses and 94% considered that specifically for this course this game has been a necessary aid.

3.5. Usability

It is important for users to know how to play and use the game on their own. They must be able to find the possible options and actions of the game without help from tutors. The users found no special difficulties and the results were also interesting in this question. Of the total, 62% responded that the game was intuitive and 24% that it was very intuitive.

3.6. Other

In previous courses on the same material (without the game), the report of the formative action revealed that the students would have preferred the course to be more practical and less theoretical. We analyzed these external documents and compared the evaluation of the course before and after the use of the game. We can observe an improvement in the perception of the students of the methodology. Initially, only 10.9 % of students evaluated it as very good (5/5) which rose to 34.2 % in the course with the game.

4. Conclusion and Future Work

In this paper we have presented a learning game that reinforces and checks the knowledge acquired in a course for teaching sports to handicapped people. The game has been specifically developed for this course and this has given us the possibility of adapting the contents to the necessities of the students. The good intentions and hypothesis that we had at the beginning of the project have been evaluated with the students and the results have been satisfactory in all the aspects ranging from the student learning capacity to their enjoyment. As future work we plan to increase the number of activities and the personalization characteristics of the game. The more content and the more different ways to show this content, the better the personalization we can offer the student. With this objective in mind the student can learn the same concept with different tools or mini games.

5. Acknowledgment

This project has been supported by the “*Instituto Andaluz del Deporte*”. Special thanks to Aurora Cosano for believing in our work.

6. References

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