Course Work: Educational Computer Games

by Student Name

Foundation Course – Course #

Tutor: Tutor's Name

Educational Institution

Department

dd mm yyyy

Course Work: Educational Computer Games

Introduction

Technology is rapidly changing how we are doing things in today's world. With digital technology transforming the way human beings interact and carry out their daily routines, educational systems should be tailored in such a way that they prepare the young generation for this change. Students are growing up in this environment and the role of the educators to adequately prepare them for the future is being questioned by parents and the government (Ma, 2011). It follows that what students learn in school should be changed in line with current trends. Also, how this content is delivered should be reviewed. The use of educational games is a step in the right direction. However, research has shown that evaluation of educational games has been found wanting due to the different features found in different games intended for the same discipline. Serrano (2012) notes that evaluation of educational games is a big challenge.

Statement of instructional problem

According to Devlin (2011), school education has a great part of its future pegged on educational games that have a good design. Students tend to grasp the course content quickly and with ease while using educational games as a learning tool. Educational games actively engage the students thus improving their participation in the classroom. This participation is believed to improve the understanding of the content by the student. The student is also believed to acquire other skills required by the job market while interacting with other students. These skills may include the ability to work in a group among others. An example of where these games can be used to impart knowledge to students is in high school physics classes. Although educational games have been found to be helpful to the student, a problem arises when the ability of these games to address specific objectives in certain disciplines is

questioned. Interviews were conducted on English speaking high school students and a teacher to shed more light on this issue.

Summary of interviews

Teachers are embracing the use of educational video games in the modern-day classroom. According to a high school teacher of physics in Utah interviewed, computer simulations have gone a long way in helping the students understand some principles, such as the behaviour of bodies in motion. In certain games, the student is required to know the effects of heat on matter. According to this teacher, these are basic principles that every physics student has to grasp. By putting these lessons in a video game, the concept is passed on to the students in a way that is both interesting and fun, as opposed to the students attending a lecture on the same subject. However, the teacher is worried that if the games are not evaluated, they may veer off the course objectives. The American teacher argues that a game developed for physics students should be evaluated by a physics teacher. This should hold true for all other subjects according to this teacher. The physics teacher believes that the game should be evaluated on its ability to meet the course objectives.

Proposed solutions

The students are also of the opinion that educational gaming enhances their ability to understand course objectives. A physics male student, for example, acknowledges the role played by educational gaming in his understanding of centripetal and centrifugal forces. He notes that this concept was understood better as he played a video game that involved movements in circular paths. The student from a high school in Utah also noted that it would be better if educational games were developed in a similar manner as entertainment games. He said that he found the games developed for some classes, especially physics, were more of simulations.

A female physics student from the same school agreed with the first student on the issue of gaming improving the understanding of the course objectives. She, however, said that the developers should try to involve students in the development stage of the educational games so as to ensure that the needs of the students are catered for. She also notes that educational games have sharpened her situation awareness skills. This could have not been possible in an ordinary lecture setting.

Summary of proposed solution

It has been noted that 97% of American teenagers play video games regularly (Lenhart, Kahne, Middaugh, Macgill, Evans, & Vitak, 2008). As a result, the instructional activity suggested to address the problem stated should take the following format. Developers of educational games should try to identify the areas that the students find interesting and use them as guidelines while developing these games. Educational games should also be developed, such that they replicate the course objectives. Both the teachers and the students should be involved in the developing stage. This should ensure that the game remains relevant and that it is evaluated by somebody who will use it to teach. The game should be evaluated on the basis of how well it meets the course objectives and if it can readily be adapted to already existing systems. The educational game should engage the students according to their levels of skill. It should not be too easy, nor too demanding. A set period of time should be given to complete a certain task within the game. The time allocation should be done with the complexity of each task in mind. Games that can be played over a network should be used to allow the students to interact with each other and with their teachers. For the students to fully benefit from the video games, they must take an interest in computers. Computer literacy is also a requirement for the use of computer games in physics classes to be a success.

Conclusion

For any educational activity to be deemed as acceptable, extensive evaluation on whether it meets the set objectives must be done. Educational games are no exception to this rule. Though they have been identified as a good teaching method, their evaluation has not satisfied many educators. The best person to evaluate such a game is a teacher of the specific field the game is designed to teach. This is because he/she knows what the students are expected to learn and in what order.

References

Devlin, K. J. (2011). *Mathematics education for a new era: video games as a medium for learning*. Natick, Mass: A K Peters.

Lenhart, A., Kahne, J., Middaugh, E., Macgill, A. R., Evans, C., & Vitak, J. (2008, September). Teens, video games, and civics. Retrieved from the Pew Internet & American Life Project Web site http://www.pewinternet.org/Reports/2008/Teens-Video-Games-and-Civics.aspx

Ma, M. (2011). *Serious games and edutainment applications. London*: Springer-Verlag London Ltd.

Mcgrath, D., Wegener, M., Mcintyre, T. J., Savage, C. & Williamson, M. (2010). Student experiences of virtual reality: A case study in learning special relativity. *American Journal of Physics*, 78 (8), 126-142.

Savage, C., McGrath, D., McIntyre, T., Wegener, M & Williamson, M. (2010). Teaching Physics Using Virtual Reality. *American Journal of Physics*, 1236, 83-100.

Serrano, A. (2012). *Proceedings of the 2012 IEEE Global Engineering Education Conference (EDUCON) Marrakech, Morocco*. Piscataway, NJ: IEEE.

Spires, H. A., Row, J. P., Mott, B. W., & Lester, J. C. (2011). Problem solving and game based learning: Effects of middle grade students' hypothesis testing strategies on learning outcomes. *Journal of Educational Computing Research*, 44(4), 452–472.