Digital game-based learning

Digital game-based learning (DGBL) is an instructional method that incorporates educational content or learning principles into video games with the goal of engaging learners. Applications of digital game-based learning draw upon the constructivist theory of education.

BY HEATHER COFFEY

Drawing from the constructivist theory of education, digital game-based learning (DGBL) connects educational content with computer or video games and can be used in almost all subjects and skill levels. Proponents of digital game-based learning contend that it provides learning opportunities that engage students in interactive instruction and helps prepare them to participate in the globalized, technological society of the 21st Century.

History of digital game-based learning

Marc Prensky explains that the emergence of digital game-based learning came in the "last decades of the 20th century," when there was a global technology boom.[1] The recent generations of students in grades K-12 have lived their entire lives with access to technology — not only computers, but also digital music and video players, cell phones, video games, and a host of other gizmos that require technology. Because of this access to technology, Prensky argues that today's students "think and process information fundamentally differently than their predecessors."[2] Teachers, or what Prensky calls "digital immigrants" now have to adapt to the language and learning styles of "digital natives," a term he uses to describe students who have always been surrounded by technology.[3] Prensky recommends that in order for teachers to adapt their instruction to meet the needs of students, they can implement computer or digital-based games as learning tools in the classroom. These games can be used in various subject areas and in a variety of ways.

Components of digital game-based learning

Digital game-based learning involves activities that can range from completing very simple tasks to the development of intricate problem-solving skills. According to Patricia Deubel, games can be categorized as "action, adventure, fighting, puzzle, role-playing, sports, and strategy."[4] Deubel suggests that the following information should be taken into account when teachers are selecting games for students:

- Students' age, characteristics, gender, competitiveness, and previous gaming experience.
- The game's target age level.
- Special needs. Would students with disabilities be left out?
- Gender and racial diversity. In its choice of characters, language, or situations, does the game offend or slight any particular group of students?
- Number of players. How many students can play at one time? Will too many be left sitting on their hands?
- The role of the teacher.[5] Passive observer or active participant?

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Additionally, teachers should consider whether the game will cause too much competitiveness, if it will be ongoing, and the effectiveness of the difficulty level.

Deubel suggests that there are a few necessary components required for effective digital game-based learning. First of all, the games must keep learning and engagement at a high level. Rules and goals are also important components of a strong game-based learning program. Teachers must make the outcomes of the games clear and provide immediate feedback. Deubel also recommends that students have an interactive role not only with the game, but with other students as well.

Benefits of digital game-based learning

According to Patricia Deubel, digital game-based learning has the potential to engage and motivate students and offer custom learning experiences while promoting long-term memory and providing practical experience.[6] Deubel suggests that in order for teachers to effectively use game-based learning in the classroom, they must first find non-violent games that facilitate planning and problem-solving and relate to the curriculum. Deubel recommends role-playing, simulation, and adventure games because they often appeal to the development of more than just one skill. Deubel also notes the function of game-based learning in the development of vocabulary skills and the enhancement of mental quickness.

According to Mark Griffiths,[7] video or digital games provide a great tool for conducting educational research. Griffiths contends that digital games have "great diversity," while attracting students of various demographic backgrounds.[8] They also help students set and work towards achievement of goals, provide helpful feedback, and maintain records for measurement purposes. Furthermore, Griffiths suggests that the interactive nature of video games stimulates learning and encourages participants to challenge new topics or knowledge. Griffiths also notes that video games can help students develop computer skills that they may need in a society that continues to develop technologically.

Limitations of digital game-based learning

Although digital game-based learning appears to have some benefits and can be engaging to students, those opposed to this type of supplementary curriculum suggest that the games may be more distracting than a typical learning tool and that the goals of the games do not necessarily always align with the learning goals of the classroom. When using this form of instructional tool, Deubel suggests teachers must also take into account how the game's features might affect students cognitively and physiologically.[9] Teachers must determine whether the content of the game is appropriate for specific age groups and whether the games are suitable for the standards-based accountability movement.

Griffiths also cites some disadvantages to using video or digital-based games in the classroom. Most notable of the limitations of using digital-based games is the fact that video games are constantly being upgraded. As a result, it's difficult for educational researchers to evaluate the educational impact of some games.

Teachers must also take into account the amount of technology available to them in the school setting. If there is not enough technology to support a digital game-based learning program, some students may not have equal access to this type of instructional tool.

based learning, educational techniques, game-based learning, games, and teaching methods.

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Using video or digital games with special-needs groups

Griffiths refers to the merits associated with using digital games with special-needs children. For example, he cites a case where video or digital games had a calming effect on a seven-year-old child with autism. Griffiths also provides research data that suggests that adolescents with attention deficit disorder may experience improvements in "grades, sociability, and organizational skills" when using educational video games.[10] Additionally, Griffiths touts the possible benefits of using video or digital-based games with children with diabetes and other forms of illnesses that require rehabilitation.

Notes

1. Prensky, M. (2001). "Digital Natives, digital immigrants." *On the Horizon*. 9 (5), p. 1. [return]
2. Prensky, M. (2001), p. 1. [return]
3. Prensky, M. (2001), p. 2. [return]
4. Deubel, P. (2006). "Game on!" *T.H.E. Journal (Technological Horizons in Education)* 33 (6), pp. 30-35 [return]
5. Deubel, P. (2006). P. 33. [return]
6. Deubel, P. (2006), p. 32. [return]
7. Griffiths, M. (2002). "The educational benefits of videogames." *Education and Health*. 20 (3), pp. 47-51. [return]
8. Griffiths, M. (2002), p. 47. [return]
9. Deubel, P. (2006), p. 30. [return]
10. Griffiths, M. (2002), 49. [return]