Chapter 7.7

Game–Based Instruction in a College Classroom

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ABSTRACT

The last 20 years have brought an increase of computers into educational and home environments, generating an explosion of available educational software products. As a result, students bring a wealth of technology experiences to the college classroom. The use of games as an instructional strategy in the higher education setting is fairly new. This chapter examines the effects of game-based instruction on learning outcomes of college students studying basic computer concepts. With the growing trend toward the use of games to support learning, research is needed to examine learning outcomes. Perhaps faculty will be willing to move to more empirically tested game-based learning strategies, even though initial curriculum development time may be increased.

INTRODUCTION

On occasion, talking with some colleagues about instructional techniques to interest and motivate students in a college classroom sometimes results in patronizing looks of amusement. Why would we invest that extra preparation time? Instructors believe that using alternate strategies that incorporate forms of instructional technology into their curriculum may involve more effort than it is worth (Iding et al., 2002). As teachers tend to teach according to their own personal learning strategies (Cohen, 2001; Pierson, 2001), habituation may be a factor. This study was designed to find

out if using active learning methods in the form of games, which often entail additional planning time, result in greater student engagement and increased learning outcomes in an introductory computer class.

Motivating students to learn and complete class assignments is becoming a topic of discussion among college faculty. Low levels of motivation can be partially explained by a lack of time to prepare for class as students are increasingly faced with financial responsibilities while they attend school. Reductions in financial aid, tuition increases, and consumerism have caused more students to work part-time, reducing time devoted to study (Bacdayan, 2004). The National Center for Education Statistics 1999 report states that 80% of all college students are employed (Oblinger, 2003). Financial pressures effect the institution as well, creating larger class sizes which allow students to passively drop-out. In addition, there are reported declines in the basic academic skills of incoming students (Lanier, Tanner, Zhu, & Heady as cited in Bacdayan, 2004), making it difficult for some students to understand course material at the given level. Lack of understanding course material, however, does not often result in lower course grades, as one would expect. Over the past two decades, widespread grade inflation has been documented and some students expect to get by with less effort (Landrum, as cited in Bacdayan, 2004).

Successfully motivating college students to learn may be related to instructional techniques used. Barriers to instructors changing teaching techniques to more active formats include curriculum need to cover extensive material, preparation time, and diverse perceptions of the methods with which students' prefer to learn (Bonwell, 1999; Iding et al., 2002). Evidence suggests that lecture is still the primary form of content delivery (FSSE, 2003). Lack of student motivation does not necessarily cause faculty to change their instructional strategies.

Proponents for the provision of hands-on activities in a variety of grade levels and from different subject fields have recommended that teachers find ways to involve students to participate in and be responsible for their own learning (Begley, Springen, Hager, Barrett, & Joseph, 1990; Bonwell, 1999; Brountas, 1996; Erwin, 2005; McGraw, 1998; Oblinger, 2003; Silberman, 2006). Oblinger (2003) describes one of the learning attributes of incoming college students as more closely resembling *Nintendo* than logic, symbolizing a trial and error approach. Losing a game is the fastest way to mastery, as losing allows individuals another chance at winning. Games minimize passivity and arouse natural curiosity. This instructional strategy may be a better fit for today's college students who do not know a world without technology and indicate a preference for hands-on activities using technology tools (Oblinger, 2003).

One result of the rapid technology development is the multitude of educational Web browser-based games and the ability to manipulate application software through Visual Basic for Applications (Doe, 2005; Foster, 2001; Junion-Metz, 2002). Games have wide appeal. The *Pew Internet & American Life Project* reports that slightly more females than males play computer and online games (approximately 60% compared to 40%) while about the same number of males and females indicate an affinity for video game playing (Jones, 2003). Current Web sites offer instructors ways to design browser-based games that provide opportunities for practice through exercises, quizzes, and pre-assessments that encourage students to continue to try until mastery is reached. In addition, due to the growing number of college students with learning differences, games for learning cannot be discounted as a viable instructional technique. Video games for attention-deficit disorder are being prescribed as one therapy option to foster stronger focusing skills (Snider, 2005). This has implications for higher education institutions that accept federal funding.

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