

Games and Learning

Scenario

Professor Leahy teaches a course called French History: 1778–1871. This term, he begins with an activity in which each student is given a card with the name of a person in French history from the period covered by the course. Each student is to find his or her place at one of the tables, labeled Revolution (1778–1795), Rise of Napoleon (1796–1804), The First Empire (1804–1815), Restoration of Monarchy (1815–1848), and Second Empire (1848–1871). As students mill about, they ask each other questions and put their heads together over tablet computers, smartphones, and textbooks. There is discussion and laughter, particularly when three students discover they each have the character Tallyrand. At first they all knot at a single table, but quickly they realize they need to split up because Tallyrand had a place in the governments represented by three of the tables.

Once everyone has a table, the groups have 12 minutes to answer a series of questions specific to that table's period in history, and each member of the group with the most correct answers earns 10 points toward a possible 200 points in the course. The result is a noisy and enthusiastic few minutes as teams collaborate on the questions.

The rest of the course is structured around the five time periods. As students work through the content for each period, developing an understanding of the events of each and the relationships between them, they earn points and are promoted to the next period. Most points are earned for individual activities, but group tasks—similar to the first one—are interspersed over the term. There is no curve in the course—in theory, all students could earn the full 200 points. A scoreboard keeps track of each student's point total, and optional extra-credit activities offer opportunities to earn additional points.

The final exam is structured like a quiz show, with as many as 40 points available for each student. The questions parallel the time periods of the course, creating an incentive for students to reach the level of Second Empire by the time the final takes place.

1 What is it?

Educators have long understood that **the interactive dynamic of games has the potential to benefit teaching and learning**, and recent years have seen considerable activity surrounding the use of game mechanics in higher education. Efforts to use such activities to improve learning include overlaying gaming elements onto a course, creating gaming activities that deliver content, and, in some cases, structuring an entire course as a game. The result is a diverse matrix of approaches that use gaming principles, fully developed games, or other aspects of what some describe as “gameful learning” to increase engagement, enhance learning, and explore new models of education.

2 How does it work?

The principles of gaming can create an engaging dynamic that inspires students to develop competencies and skills as they focus on the activities of the game. This is as true for small-scale gaming elements as it is for stand-alone games. Such structures can function as individual learning activities, act as a powerful content-delivery mechanism over several class sessions, or extend throughout an entire course. Where a single class session is involved, game elements might be minimal, as when points are awarded for correct answers given during class discussion. In a broader application, the syllabus might be divided into “levels” where students begin at the lowest level and work through a series of challenges with an eye to progressing through the highest before the course ends. Critique of student performance might take the form of feedback rather than grades, and students may have the opportunity to retrace their steps, find where they went wrong, and try again until they succeed. In this way, students understand that multiple attempts toward a desired objective are an integral part of learning. To be effective in education, **the learning and skill development of the game mechanics must align with desired learning outcomes**. The use of games in learning might not be competitive in a conventional sense; in fact, they might require students to work together to solve problems. In other contexts, game mechanics encourage students to compete against themselves, looking to reach a personal best or to satisfy their own learning goals.

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3 Who's doing it?

Games and game mechanics are increasingly being employed at colleges and universities. At Temple University Fox School of Business, students taking a Social Media Innovation course can earn points and badges on a leaderboard called the Social Media Innovation Quest. Points are awarded for writing blog posts, connecting with peers, and engaging in WordPress exercises. The game has been refined over time, and former students write to say the game helped them retain information. At the University of Michigan, a project that was originally developed for an undergraduate course in videogames and learning has become a game-inspired learning management system called GradeCraft. The system uses game strategies to encourage student engagement and motivation while supplying analytics data to students and instructors for information and guidance. GradeCraft has also been used in other courses at the university, including an introductory course in political theory and one in information studies.

4 Why is it significant?

Even simple game elements draw students into course content. More complex game mechanics can pique motivation through the acquisition of points, the urge to race against peers, or the personal satisfaction of learning things that they can apply outside the activity. By participating in these types of activities, students acquire information and hone abilities while achieving interim goals that provide a clear sense of progress, rather than simply focusing on completing the course. **Game mechanics reinforce the fact that failure is neither a setback nor an outcome but rather an indication that more work is needed to master the skill or knowledge at hand.** Through discrete steps that lead to a major goal, students can see the interrelationship of tactics and strategy. They begin to understand procedure, process, and the value of alternate paths. The result could be more confident, independent thinkers who are more prepared to take on large projects and carry them through to completion.

5 What are the downsides?

While games might have a natural place in pedagogy, their appeal is not universal. For some, games connote leisure and diversion rather than academic drive, which can be a stumbling block for some educators. Students, too, may have objections. Those who don't engage in gaming activity can feel self-conscious in such an environment. Instructors could find it challenging to align game dynamics with the

learning objectives of the course. To be effective as an educational model, the exercise must meet a defined learning objective while being engaging and fun. Even students who enjoy games otherwise might not be engaged with an educational game if it fails to achieve an appropriate alignment between the activity and the curriculum.

6 Where is it going?

A game-based approach to learning is one of several trends in higher education. As colleges and universities move toward closer alignment with workplace expectations, simulations of the work environment could serve as assessments in competency-based education. **The use of game mechanics has potential not only as a tool for teaching but also for evaluating learning,** which could include formal or informal learning, prior learning, or experience-based learning, providing increased support for a wider range of students. Another movement in higher education—badging—is, in many ways, a natural fit for gaming, as a way of marking and acknowledging progress. Meanwhile, expect to see an increase in educational games on mobile devices, which enable students to more easily participate in gaming activities and, in some cases, to do so in real-world and authentic settings, further enhancing engagement and learning.

7 What are the implications for teaching and learning?

Applying the principles and structures of games to learning can draw students into learning in ways that most traditional forms of teaching cannot. Games can be highly motivational and engaging for students, and they have the potential to demonstrate—both to students and instructors—that learning can be measured not just by grades but by competencies, as is inherent in a game structure. When gaming activities are designed for teams, they build collaborative skills. Everyone has played games for fun, and bringing those kinds of activities into an academic setting bridges a gap that typically separates games from learning. It also shows that learning is a process of trial and error, of repetition and practice, and of incremental progress toward larger goals. In all these ways, using games in learning can be as influential for how instructors teach as it is for how students learn.

Members of the EDUCAUSE Games and Learning Constituent Group contributed to this publication.