THINGS YOU SHOULD KNOW ABOUT...™
GAMIFICATION

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Scenario

Kendra is a sophomore taking an introductory course in forestry. Professor Sievert divides the class into teams of six students each and hands out a list of 100 plants found in the nearby national forest. Each team is responsible for finding photos and information about these plants, familiarizing themselves with them, and ensuring that they can identify them on location. The teams have two weeks to collect all the information they can and to quiz one another on plant recognition.

Then, two weeks from Friday, Sievert explains, teams will compete in a contest in a specified area of the nearby national forest to see which team can provide the most and best identifications in a two-hour window. Teams will win "identification points," and the team with the most points will win tokens allowing each every member to turn in any one paper up to 48 hours late during the term.

Kendra and her team gather with their cell phones in hand half an hour early on the day of the contest. This gives them a few minutes to look over the rule sheets as Sievert distributes them. Rules are fairly straightforward. "Correct identification" consists of a photo of the plant with a team member standing beside it, sent by cell phone to a designated dropbox. These photos must arrive with a message giving the name of the plant and appropriate metadata. A standard plant on the list is worth 10 points; one marked "rare" is worth 25. There are also 5-point bonuses for a plant photographed in bloom, one correctly identified as suitable for human food, or one identified as toxic. Any misidentifications will subtract the number of points from the team total they would have added had they been correct.

Kendra's team decides to separate into three groups of two each. When the starting whistle blows, Kendra and Jacob set out as partners to find, photograph, and identify. The cell phones are busy snapping pictures, receiving images from other team members for confirmation, and submitting photos to the dropbox. There are also several calls to coordinate team progress. At the end of two hours, the teams meet back at the gathering place. The unofficial tabulation suggests Kendra's team has won by 5 points. She's glad to learn that her team will be competing in similar contests throughout the term.

1 What is it?

Gamification is the application of game elements in non-gaming situations, often to motivate or influence behavior. In business contexts, gamification is used to create an engaging dynamic—such as the points system created by Weight Watchers—and to build brand loyalty. It also has wide currency in organizations where it may be used to encourage member or employee interest in projects or organizational efforts. In academe, gamification typically employs elements such as points, badges, or progress bars to engage or motivate students in the learning process. Whereas building a full-scale game requires the design and construction of a holistic, systematic environment to house the project, successful gamification can involve no more than the employment of a few feedback or reward elements. That said, the practice is most effective as a pedagogical tool where it forms part of a well-planned strategy to encourage research, inspire creativity, teach basic principles, or hone problem-solving skill.

2 How does it work?

Many instructors implement gamification because they believe the rewards or the spirit of competition will spur students' concentration and interest and lead to more effective learning. On the surface, these rewards may include items such as physical tokens, badges, or points toward a long-term goal. Students may strive to "win" recognition among their peers or the larger community or engage for personal satisfaction or a simple sense of accomplishment. But beneath these game-like prizes lies another level of reward that may include relevant feedback, learning reinforcement, and a lively and collaborative class environment. While technology is not essential to gamification, it can make management simpler. Many faculty use technology to track accomplishments, total points, and aggregate results. In addition, gamification elements can happen both inside and outside the classroom.

3 Who's doing it?

The use of gamification is wide ranging in higher education, whether adapted from publicly available applications, designed by individual instructors, or created by departmental staff. Students at Pepperdine University's business school, for example, are currently piloting a free web-based gamification tool called Veri. The product invites participants to test themselves on course topics using questions the instructor has entered. Game-like overtones include immediate humorous feedback and a running scoreboard for students to track their success. As they progress through various levels, a leader board sparks competition by showing who has the highest scores. In an economics course at

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Penn State, an instructor-designed example that ties content to play asks "So You Want to Be a Millionaire?" The syllabus notifies students that grades are for sale and explains that the primary way to acquire capital is by answering multiple-choice questions correctly, in this case on the course exams.

Not every use of gamification in academe is tied to coursework. Metadata Games at Dartmouth College arose from a critical need in the college archives. Vast photo repositories were being left unused by researchers because they lacked metadata necessary for effective searches. In response, a Dartmouth design team built a game-style interface that invited students to tag archived images either as a solo activity or in two-player game-like scenarios. The pilot phase alone netted over 6,000 image tags from players, suggesting that this kind of implementation may have intriguing potential for archivists and curators.

4 Why is it significant?

Adding game components to a course can result in several real benefits. Simulations can help students sharpen an ability or work out a novel solution, while a game-style patina may present coursework more as a challenge than a chore. But perhaps the most commonly cited benefit of gamification is that it fosters student engagement, often cited by the National Survey of Student Engagement as a key to increasing student retention. Where it functions well, gamification facilitates the formation of learning communities, giving new opportunities online or during course discussions to socialize or work as teams. In this sense, **gamification has the potential to help build connections among members of the academic community, drawing in shy students, supporting collaboration, and engendering interest in course content that students might not have otherwise explored**.

5 What are the downsides?

Some stakeholders feel any introduction of game elements trivializes learning content. At the same time, students may see game elements as condescending or feel disappointed and frustrated when their application is not successful or does not yield the kind of satisfaction from winning that they expect. The competitive element that intrigues some students may discourage others, particularly those who have trouble with course content. They may feel the competition introduces another level of complexity or that it will reveal their difficulties in understanding the content to the rest of the class.

Gamification can be deceptively difficult to employ effectively, and examples of failed efforts are not hard to find. For example, awarding points to students whose blog entries garner the most responses might encourage some bloggers to enlist their friends to comment, without regard to quality, their drive being the extrinsic rewards rather than the quality of the work they submit. In addition, careful thought must be given to the administrative details of gamification lest instructors be overwhelmed by the workload of tracking student progress through points, tokens, badges, and other game elements.

6 Where is it going?

The use of technology in gamificaiton has given rise to several grants from sources such as Next Generation Learning Challenges and the Bill & Melinda Gates Foundation. Such **support for gamification is likely to encourage more complex, technology-based, interactive scenarios that extend beyond individual classrooms**. In fact, gamification is already moving toward institutional uses, in implementations such as "Just Press Play," debuting at the Rochester Institute of Technology this fall. This university-wide instance of gamification is structured to involve students in all aspects of the student community experience. They earn badges for activities such as going to the gym for the first time or getting A's during a term, but the awards are part of an integrated approach to engage them throughout the four-year program. Similar projects employed at a departmental or institutional level might serve many cross-disciplinary purposes to help students construct portfolios, build organizations, or derive artistic or business solutions that could bridge the space between the educational experience and career achievement.

7 What are the implications for teaching and learning?

While the term "gamification" is of fairly recent coinage, the use of game elements to teach is certainly not new. Instructors have long understood that interactive experiences engage student imaginations and increase motivation. **Gamification offers instructors numerous creative opportunities to enliven their instruction with contests, leader boards, or badges that give students opportunities for recognition and a positive attitude toward their work.** These elements of play take advantage of the human desire to compete and socialize, as well as to measure progress toward clear goals, allowing individuals to compete against themselves. Where they are employed thoughtfully and effectively, game elements can engage and motivate students, encourage exploration, foster independent effort, and generate unexpected solutions to the problems posed by course content.