

Colorado Technical University



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Assessment by Playing: Using Game Design in Our Online Course Rubrics

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Abstract

Using games in our course designs is an effective strategy. It is not necessarily successful unless we have a good method for communicating and measuring the course requirements and objectives.

This paper discusses the design of an online course and a hybrid course that used game-based rubrics to stimulate better participation and collaboration during team activities. Two companion papers continue the story, covering the delivery and assessment of these two courses.

While the case study focuses on two graduate course examples, the concepts are defined and the discussion is suitable for all audiences.

Keywords

online course, hybrid course, rubrics, games, interactivities, activity-based learning, pedagogy, andragogy, adult learning, learning by playing, the Professional Learning Model (PLM), team projects, collaborative exams, asynchronous discussion and measurable goals

Injecting Online Excitement

Do students look forward to taking your classes? What is it that makes attending an online, hybrid or traditional class engaging to students?

Perhaps you add excitement through the discussion of unusual topics, host great case study analyses, offer activities that stir the imagination or use games in your course designs.

Whether you teach undergraduate, graduate or general education courses, you face the challenge of competing for your students' attention. How do we promote competency-based skill development amid the many distractions that surround our students?

The "T" Word

How many online students look forward to participating in a team project? For that matter, how many traditional students who attend campus classes get excited when they hear the words "You are going to work in groups to complete a team project."

Once the sounds of groaning subside, you have to work hard to get the class energized and enthusiastic about the project. This is especially true in online classes, where students may feel disconnected and uncertain on how to proceed. Developing great online collaboration skills is important.

Fear and Uncertainty is Not Our Friend

Not many students like to participate in a team project due to some very realistic fears. Some fear that their grade will be reduced by the poor quality contributions of their teammates. Others dominate the team, preferring to take charge to the detriment of the team benefits. Some students do not contribute to team activities due to stress from outside class while others are uncertain of how to do the work.

Working with teams of 3-4 students requires skills that take some work to develop. Developing these organizational, social, and leadership skills requires guidance and mentoring for students to grow and flourish. The common concern from students is "How can we accomplish these goals, produce a product, and do it all in 5-11 weeks?"

We know that teams produce better products. The team's collaborative activities also simulate professional work experiences, giving students skills that they can use. Work projects often require teams to work together to produce successful products. As the industry moves away from the traditional office to remote workspaces, we need good online communication and collaboration skills that help our students be successful.

Why Are Online Teams Projects Hard?

Collaborating online looks easy on the surface. Yet, we know that over half of the posts by students on an asynchronous discussion board sound like monologues rather than interactive, progressive discussions. Communication requires an understanding of the subject, reflection, feedback and interaction. It flourishes when there is a direct connection between peers and the instructor. The volume of posts is of less interest than the content that is communicated. Timely feedback and communication is very important.

Meeting online with faceless team members is difficult for some students. It helps to have opportunities for them to socialize and form stronger bonds before expecting quality team products early in the project's lifecycle.

Why Do We Require Team Projects?

At Colorado Technical University, our classes use the CTU Professional Learning Model (PLM), a compilation of the best practices in adult education (Leasure, 2004). The PLM focuses on learner-centered instruction and applied problem solving to promote skill development. Students develop projects that align with real world practices, giving them competencies they can directly apply in their professional careers.

The action shifts from memorizing terms to applying them to solve new problems that are common in the workplace. This shift from pedagogy to andragogy plays an integral role in adult learning (Nevins, 2003).

Measurable Goals

When we schedule assignments, we're measuring how well students have achieved the course objectives. Our choice of assignments has a direct effect on the results. How we describe, monitor and evaluate each activity is important.

The case study was designed to promote participation earlier in each course and enhance the quality of collaboration and communication during team activities. These goals were compared to prior sessions of the same online and hybrid courses.

Increased participation -- students participating often and openly
Better participation -- beginning activities and discussions earlier in the course
Improved collaboration and communication -- posting productive contributions
Individual assessment of the team project activities -- shifting from a team grade
Successful projects -- building measurable competencies and skills

Why Incorporate Games Into Our Course Designs?

After all, is it our job to entertain students or to help them learn new skills and competencies? Well, today's learning environment competes for the attention of our students. Would students rather be spending time with their friends and families, working, playing a video game, exploring the Internet, watching a movie, or pursuing their favorite hobbies? Students need motivation and a good reason to login and actively participate.

If we know what motivates our students and use these motivations effectively in our courses, we can foster participation earlier in the course and help build excitement. Students will want to login to our courses to join in the fun! While incorporating games into our course designs may seem like an obvious choice, how do we ensure skill development with alternative approaches to learning?

Alternative Approaches to Learning

Learning by playing (Corbett and Kearns, 2003) is popular in today's online and hybrid classes. Making a class fun and engaging can include strategies like developing custom crosswords (Bergstrom, 2004), using word games, or incorporating Flash interactivities (Carbol, 2004).

Interactivities, including Flash animations, word games, and mazes, do add excitement to the class, but require a good scoring and feedback system to help students understand the quality of their work and how to improve it. We also need to ensure that students learn the desired skills and competencies during each course.

Where Do We Begin?

Designing an exciting online course that uses collaboration effectively is not as simple as it sounds. First, you cannot assume that using games will guarantee success. Secondly, student fears need to be addressed, and as noted earlier, the first fear is the fear of failure.

Most students want to be successful and feel that team projects are difficult. Working with people is challenging before you add the time pressure of a class team project and the faceless nature of the online learning community.

Why not use a game scoring method to provide feedback and streamline the grading process as a starting point? This will help students know how they are doing while they play a very simple game.

In this case study, we began by designing a set of rubrics that uses a Treasure Hunter game concept based on Bonita Bray's research in the use of games for learning (Bray, 2004). Instead of using points and letter grades, these rubrics award imaginary gold coins to students for each accomplishment. The amount of gold earned depends on the quality of their work.

What Are Rubrics?

Rubrics are categories that define what quality means in a course. We use them during grading to give feedback to students, letting them know if they have received the grade of A, B, or C. Rubrics can include qualitative or quantitative information that defines what it takes to do well in each grade category.

In the Treasure Hunter Game, each assignment and activity was worth a number of gold coins. The amounts varied based on the type, the amount of work involved and importance of the activity.

The next problem was to determine how many measurements would be taken for different parts of each assignment. The team project was broken into a series of steps that included:

- Offering ideas concerning the content of each section
- Mentoring discussions where teammates help one another discover alternative strategies
- Communicating the project status to other teammates
- Posting draft sections of the project
- Reviewing and providing feedback to the draft sections from other teammates
- Posting the final project sections
- Integrating the project into a single document

Each assignment had an opportunity for students to win bonus gold coins for superior work beyond the course expectations. Some of the activities had a range of possible coin awards, similar to receiving an A, a B, or a C, while others were pass/fail. Students either received the coins or they did not receive them. The range of possible coins to earn depended on the depth of the task.

Game-based Rubrics

Here is a summary of some of the measurements used during the exam and the team project. The game's conceptual terms were used to describe exam and project activities. Every 2-4 days, the Treasure Hunter's Gold Coin Report was posted, reflecting new activity. During the last week of the course, updates were more frequent as the amount of activity increased.

Collaborative Exam -- Gold Pieces (gps)

- The Quest -- contribute 2-3 responses for the three exam questions (15-45 gps)
- Collaboration -- reply to the other players, adding facts and an analysis (30-60 gps)
- Bonus Round -- propose additional ideas with an in-depth analysis (10-30 gps)
- Final Discovery -- submit your final exam, demonstrating your conclusions (45 gps)

Team Project -- Gold Pieces (gps)

- Team Formation (10 gps)
- Topic and Assignments -- assign sections to teammates for distributed leadership (10 gps)
- Share ideas -- discuss the content of each section (10-50 gps)
- Post a project status report -- (20-60 gps)
- Bonus for early status reporting -- (5-15 gps)
- Post your draft sections (20 gps)
- Review and provide feedback on the draft sections (15-45 gps)
- Post final sections (10 gps)

Integrate the project (10 gps)
Bonus! Early project completion (10-20 gps)
Team Evaluation (10 gps)
Project Quality (10-50 gps)

Online Project Presentation

Slides contributed (10 gps)
Slides integrated (10 gps)
Presentation Quality (10-50 gps)

Additional rubrics were used for discussion question, abstracts, and the lessons learned paper. This information is available upon request.

What Happened Next?

Once the Treasure Hunter Game structure was designed, it was tailored slightly to be used by two classes: a Software Requirements Engineering online class and a Software Systems Engineering Processes hybrid class. The second class focused on developing software processes and improving how we produce software products. Both classes focused on team projects and cooperative work. Students also worked together to complete a collaborative exam that included participation from the entire class.

Do you want to know more about the case study? Read the second paper in this series, entitled "Let's Play: Using Game Design in Our Online Course Rubrics" (Calongne, 2005).

See you online!

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