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The Treasure Hunter's Guide to Online Team Projects

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Abstract

Engaging the interest and enthusiasm of our online students is vital. Getting them to login, participate in collaborative activities, and contribute to a team project leads us to search for new ways to peak their interest. Learning games offer exciting ways to energize an online class.

This paper discusses the design and delivery of an online and a hybrid course that used a Treasure Hunter Game with imaginary gold awards as an intriguing form of rubrics. The advantages included early and better participation, individual assessment of team project activities, and an enhanced learning experience. Refinement recommendations are also discussed.

The Problem

Do your students enjoy team projects? Many students dread them and are reluctant to participate for excellent reasons. Most students live in the land of fear when it comes to team projects. While there are many fears possible, the most common fears are the:

1. Fear of failure, leading to a poor project grade
2. Fear of being unsupported by teammates
3. Fear of working with unpleasant teammates
4. Fear of poor conflict management and resolution
5. Fear of seeming incompetent
6. Fear of working on a lousy project topic
7. Fear of being evaluated based on someone else's poor performance

It is interesting that many of these fears also plague professionals in the workplace. They are not unique to an online or campus class. Students need to know how to gain control over these fears so they can produce successful team products.

After reviewing these fears, it may seem inadvisable to schedule a team project for an online class. After all, if the students do not like them, then why bother?

Pedagogy and Andragogy

As we shift from a focus on pedagogy and the memorization of basic facts and rules, we are interested in supporting how adults learn. Andragogy uses problem-solving approaches to help learners understand how to apply the concepts in real-world situations (Nevins, 2003). Activity-based learning supports adult learners, helping them develop skills and competencies. Some skills do depend on coordination from other participants, leading us to identify how to provide better online team experiences.

At Colorado Technical University (CTU), we use the Professional Learning Model (PLM), an accumulation of the best practices in education (Leasure, 2004). CTU faculty attend classes in how to use activity-based learning, rubrics, and course assessment in their campus and online course designs.

Authentic assessment strategies support activity-based learning, providing opportunities for learners to use the information to solve problems (On Purpose Associates, 2001). The PLM encourages authentic assessment, activity-based learning, and a learner-centric classroom environment. While individuals can do great things, teams of learners can create wonderful solutions by sharing the workload.

Teams tend to explore more ideas, evaluate their merits, and often produce better products than individuals, especially when the timeframe is short. In some subject areas, teams are vital to product development. We want our students to know how to conduct successful team projects and to produce successful products and services.

Today, online collaboration is another professional communication skill that our students also need. Today, professionals work from a variety of locations outside the traditional office and they need to communicate effectively. Learning to collaborate and work cooperatively with a faceless online team requires a good project structure, practice, feedback from the team and the instructor and guidance.

The Solution

How do we energize our teams and reduce fear? If we want to leverage the advantages of team collaboration while minimizing the risks, some strategies and possible solutions need to be identified. Strategies that were considered include:

1. Provide structure and guidelines
2. Reward often and well
3. Give students control over their activities
4. Provide timely, responsive and informative feedback
5. Individual assessment of team activities
6. Use game-based rubrics
7. Offer project topic ideas to help stimulate creativity

These strategies help to remove uncertainty, reduce fear, and offer an engaging way of approaching the difficult task of participating in an online team project. All of these strategies were used in a recent case study. Since games take learners out of their traditional learning environment, stimulate their creativity, and often involve adopting effective cooperative relationships, it was chosen as a good method for enhancing team collaboration.

The Treasure Hunter Game Case Study

At CTU, a Treasure Hunter Game was designed to enhance the learning experience for an online course and a hybrid course during Fall 2004 (Calongne, 2005). Both of these graduate courses included computer science students who were resistant to participating in team projects. At the first class, students expressed uncertainty about the success of online or hybrid classes, and some of them noted that they did not like to login to the online course or post their ideas publicly. We needed a solution that would address their fears.

When designing a learning by playing game, it is tempting to begin by designing fun crosswords, interactivities, games, Flash animations and engaging activities. After studying some of the excellent options presented in the University of Calgary workshops designed by Bergstrom, Bray, Carbol, and Corbett and Kearns (Bergstrom, 2004; Bray, 2004; Carbol, 2004; Corbett and Kearns, 2003), I decided to begin with game-based rubrics. After all, how we score a game and provide incentives is as important as the games we play. The thought was that it would be easier to add interactivities and games once we had a solid infrastructure.

The second consideration was that some students might not like to play games while learning. After all, learning is a serious business, especially for graduate students. In consideration for everyone, the game-based rubrics mapped to the traditional grading infrastructure, supporting it in a seamless fashion those students who might prefer not to play.

The game-based rubrics concept was adapted from Bonnie Bray's research at the University of Calgary (Bray, 2004). In her class on using learning games in our course designs, she used gold coins as a method of recording and acknowledging successful performance. While her workshop did not use individual aliases, it did use animal names for the team aliases. In these workshops, the students were aware of their team composition and shared scores.

Due to FERPA privacy considerations, our case study goals and the graduate course requirements, the use of individual assessment was preferred for the Treasure Hunter Game. The concept translated well for our graduate online and hybrid courses.

Once students saw the gold coin report with their aliases and quality achievements, they were eagerly logging online to participate and to discover how to earn more gold.

Designing the Game and Course Activities

The Treasure Hunter Game was a set of game-based rubrics, designed to provide individual assessment and timely feedback for a variety of online activities. These rubrics offered categories for grading, defined what quality work means in the course, and provided a checklist for students to follow. A collaborative exam, online discussion, research abstracts, a lessons learned paper and an online team project were all included in these game-based rubrics. Levels of quality (corresponding to traditional grading systems) were available for some assignments, whereas others used pass/fail rubrics.

The difference between the game's rubrics and traditional rubrics is that it awarded gold instead of points or letter grades and it emphasized the value of collaboration in the assessment of quality. It also made project objectives separately assessable for individual teammates, reducing the fear of getting a poor team grade. There were 25 separate measurement categories for the hybrid course and 27 measurements for the online course. Some activities could be repeated, such as providing project status reports or reviewing their teammates' sections and providing detailed feedback.

To add excitement, feedback centered on game-based metaphors and students were awarded gold in lieu of points for their accomplishments. The goal was to stimulate participation earlier in the course and to improve the quality of team contributions. In the case study, neither class used traditional games, such as crosswords. Learners did complete Treasure Hunter activities that tied directly to the course objectives of each class.

The hybrid course asked students to develop a plan for improving software processes while the online course required students to demonstrate their ability to elicit, define, and describe software requirements for a product. The project topics in these classes were varied, including practical, humorous, fun, and unusual subjects. They ranged from robotics software for housework, online card games, and the software to flood cell phones with unwanted ads.

The use of gold instead of points was an interesting choice. To preserve anonymity, the students selected aliases and sent them privately to the instructor. The Treasure Report listing their total gold was published several times a week, and they looked for more opportunities to earn gold.

The rubrics included bonus activities as well as the requirements for successful completion of the course. These bonus activities included awards for superior contributions (beyond expectations), for mentoring other classmates and teammates, and for taking the initiative to integrate the project and the presentation materials. There were

over seven areas in which students could excel, giving them choices for how to increase the quality of their participation.

Playing the Game

Students became Treasure Hunters in our game, earning gold for their discoveries, contributions. They used fanciful and fun names as aliases, and we encouraged anonymity by rotating the list and publishing it after a significant number of accomplishments were achieved.

It took a week to get everyone's alias listed, so the first Treasure Report had anonymous gold awards on the publicized list. Every few days, a new Treasure Report would be posted so they could see how they were doing in comparison to their classmates. Near the end of class, the report was published daily.

Privately, the grade sheet included every discreet accomplishment, the gold award, and used a spreadsheet that depicted the missing activities. Comments were noted for each student's accomplishments on the private grade sheet and in their email feedback. Bonus and superior work was noted on the sheet and in their gold awards.

Everyone's a Winner!

The Treasure Hunter Game was a great success due to the enthusiasm and energy of both the hybrid and online classes. The learners from each class were fantastic, asking better questions about their gold coin awards. They wanted to know why they had received their gold each day and how they could improve the quality of their work to earn greater recognition for their efforts. It was less about gold or game competition as the emphasis shifted to being recognized for excellence.

It was initially thought that the game mechanics might intrude with the real learning objectives, but they instead complemented the course objectives. One learner (representing 3% of our sample population) felt that the game-based rubrics were reminiscent of an elementary school approach. The feedback from other learners was that it is time to put the fun back into learning! While graduate students tend to be very motivated, adding excitement to our course designs helps learners look forward to joining in the fun.

Goals and Observations

The case study goals included increased participation, earlier participation, improved collaboration and communication, individual assessment of team activities, and the development of successful projects.

The online discussion posts, reports, and collaborative activities were compared to past online activity in both the hybrid and online courses. In both classes, participation, collaboration, project status reporting, the review of project sections, feedback and overall project quality increased.

Students were very responsive and enjoyed the game's rubrics. In fact, they became quite demanding, wanting more Treasure Report postings. The difficulty with posting more often is that it is hard to preserve anonymity if there has not been a significant amount of participation. It is easy to tell who has been awarded points based on limited Discussion Board and Team Board activity if only two students have posted.

Online participation grew in volume and quality earlier in the course. Earlier and improved participation was 88% higher in the hybrid course and 71% higher in the online course. Hybrid students tend to participate less than online students early in the course do. The hybrid class had 25 students whereas the online course had nine students.

The volume of posts in the discussion and collaboration forums increased 29%-45%. Each course included a collaborative exam as well as a team project. For the collaborative exam, students discussed three topics, eliciting information, evaluating it, synthesizing and defining it, developing skills that they would later use in their team projects. This progressive approach to problem solving worked well, and the students did a great job collaborating, evaluating and refining their decision criteria.

In each course, students submitted an individual exam via email that synthesized the collaborative exam, demonstrating their competency and skill development. This mix of discussion, reflection, application and synthesis was extremely effective for the exam, and it enhanced the quality of the team projects as they applied those same skills. They knew what they were doing, had explored the methods available, and felt less uncertainty about team goals and objectives.

The students thrived under the individual assessment method, and liked having a discreet list of detailed activities that they could perform. Some were required and some were optional, helping to enhance collaboration and demonstrate leadership qualities.

Each student was responsible for different sections of the team project, giving everyone an opportunity to demonstrate leadership. They would field the project reviews about their draft sections, incorporate ideas from teammates, and compile them into a finished product. One team member was responsible for integration of the sections into a complete project.

All of the projects were successful and demonstrated that the students had not only grasped the concepts, but had synthesized them and understood the benefits and drawbacks associated with each decision.

Refining the Game

Playing a game while taking online or hybrid courses may seem frivolous. Yet, it is a great way to connect people who are geographically distant and get them motivated. Online students may feel disconnected from their peers and the instructors. Games help learners to connect and share ideas.

After the end of term, a course assessment identified some areas that need improvement. The game-based rubrics were a great idea, but 25-27 categories gets excessive. The instructor is challenged to read, respond, then to evaluate and award gold coins based on the type and quality level of each activity. While rubrics streamline this process, too many measurements can complicate the process.

In the future, we may wish to reduce the number of required status reports and bonus activities. Consolidating activities and streamlining the workload to balance it for students and the instructor is a great strategy.

While students knew their current scores and received feedback in the online forums, they wanted more information about their gold coin discoveries. Additional thought needs to go into the feedback process. Using timely online feedback seemed to be straightforward, but students did not track the feedback with their gold coin earnings.

On the positive side, this encouraged them to ask better questions and made for a very lively course. If a student's overall gold did not total their expected earnings, they would double check their work and notice when it did not meet the quality standards. This helped to improve the quality of their work overall, but did add to the volume of questions from students.

Future Game Design Activities

Now that we have a method of scoring the game, we need interactivities that tie to course competencies and enhance the learning process. A crossword was developed for one class and it was effective for helping students understand the terminology and use it effectively. The difficulty with a crossword is that the definitions are often out of context, providing challenges even for knowledgeable students as well as the instructor!

Once we test these courses with a few interactivities, we need to evaluate their usefulness and compare the results to past course learning experiences. Through course design, delivery, measurement, and assessment, we will continue to refine our online and hybrid courses and make them rewarding learning experiences.

Please feel welcome to contact C. Calongne at calongne@pcisys.net for more information about this case study or future research activities.

See you online!

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Dr. Calongne joined the faculty at Colorado Technical University in 1996. She develops and teaches campus and online classes, specializing in computer science graduate courses. She worked for over thirteen years as a software engineer and software project manager. Her doctoral research introduced a user interface style for navigating and performing file operations in a virtual reality environment.

She chairs the MS and CS Computer Science Program Committees. While software engineering is her area of specialization, she also designs and facilitates faculty education courses on how to design and deliver online and hybrid courses. Currently, she is supporting a National Science Foundation project at San Juan College as an External Evaluator.