Gamification Challenges and a Case Study in Online Learning
Darren Wilson, A Cynthia Calongne, B and Brook Henderson C

Two design models are introduced to feature the game-design elements and relationships that are critical for successful gamification. In online education, gamification employs game mechanics and incentives to encourage positive outcomes. Making good design decisions and offering a strong implementation are critical elements in the success of gamification. The study concludes by reviewing the results from a gamification case study and offers recommendations for future research.

Keywords: Social, analytics, knowledge, networks, visualization

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A Darren Wilson is a researcher in gamification and is conducting dissertation research for a Doctor of Computer Science in Emerging Media at Colorado Technical University. He served as an Assistant Professor of Electrical and Computer Engineering at the US Air Force Academy from 2008-2011 and currently teaches high school physics, robotics, and statistics in Colorado Springs. His team won the 2005 Air Force Modeling and Simulation Award for Analysis.

B Dr. Cynthia Calongne is a researcher in virtual reality, game design and simulation. She joined Colorado Technical University’s faculty as a Professor of Computer Science in 1996 and today teaches for CTU as an Adjunct Professor. Prior to teaching, she worked as a software engineer with Air Force Space Command. In 2010, her team won the $25,000 Grand Prize in the Federal Virtual World Challenge for The Mars Expedition Strategy Challenge.

C Dr. S. Brook Henderson worked for 15 years as a project manager for information technology. She was awarded the PMP (Project Management Professional) in 2002 by the Project Management Institute and is considered to be an expert on Project and Earned Value Management. Having achieved her doctorate in management with emphasis in organization development and project management from Colorado Technical University, she has left her former profession to join the faculty at American Public University System. Dr. Henderson has presented several papers at conferences and is a published author in her field. Most recently, in 2015, she is being included in a textbook for a review she wrote on Managing Complex Projects and Programs: How to Improve Leadership of Complex Initiatives Using a Third-Generation Approach by Richard Heaslip (2014) and a chapter on the History of Management Thought as well as two articles for a new book on global leadership set to be published in 2016. Brook lives in Colorado Springs, CO and can be reached on LinkedIn, Facebook, and email.
Introduction

Gamification is not the same as a game. The educational use of gamification blends game-based mechanics (Schell, 2015) with an understanding of the needs, goals and values described by self-determination theory (Deci & Ryan, 2015) of intrinsic motivation. It encourages engagement and measurable benefits for online learning. Gamification is also part of the effort to address the needs of Generation Z, also known as "Gen Next" or "Gen I," including people born between the early 1990s and the early 2000s (Posnick-Goodwin, 2010). These folks have been thought of as smarter and more self-directed than other generations. They are able to process information more quickly than prior age groups, but they are not known for their ability to work in groups (Igel & Urguhort, 2012). The elements of mechanics and motivation merge to support applying game-based mechanics to existing educational courses to encourage engagement and measurable benefits for online learning. The authors of this study introduce the challenges associated with defining gamification and propose a model to support gamification design. The method and analysis sections review two case studies from earlier work in this field and conclude with recommendations for future research.

Theoretical Framework

Finding a succinct definition for gamification is a challenge. At its essence, is the notion that game-design elements, including game mechanics and game design principles, may transform an existing system into game-like constructs.

Gamification is not the same as a game. (Schell, 2015)

Examples of target systems include popular reward programs and academic course management tools. Definitions vary from this baseline as researchers relate the source of these game mechanics to video games, computer games or other game constructs. The centerpiece for this study is the search for an elusive definition, and to provide support for how researchers and professionals with little game design experience can leverage gamification through effective design and deployment to achieve predictable outcomes for students. During the course of the investigation mounted to find a common definition of gamification, certain themes emerged that offer great promise for advancing the research, as noted in Tables 1, 2 and 3.

Wilson (2015) proposes a model for mapping game-design elements to the values and beliefs of users and in turn, another model that examines their relationship to their perception of usefulness and task performance. The combination of bridging game mechanics with the values and task perceptions of the players helps to promote a game that fosters meaningful play (Huizinga, 1955; Salen, Tekinbas & Zimmerman, 2003). The result may lead to more applicable and predictable results for online education, engagement and learning.

Finding a succinct definition for gamification is a challenge.

The Quest for a Gamification Definition

Although gamification lacks a standard definition (Seaborn, 2015), common themes are found in the literature. For example, Denny (2013) defines gamification in terms of game elements used in non-game applications, whereas Li,
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Table 1: Method descriptors from gamification definitions in peer-reviewed empirical studies

| Grossman, and Fitzmaurice (2012) define it in terms of video-game elements used in non-game situations. Both studies employ a similar method in its definition (game elements vs. video-game elements) and a similar context (non-game applications vs. non-game situations). To explore these commonalities, the authors of this research study examined 47 peer-reviewed, empirical studies that were included in two meta-analyses (Seaborn 2015, Hamari, et al. 2014). Most of the 47 studies were obtained from the reference section of the meta-analyses using Google Scholar. Thirteen of the referenced studies were not available from Google Scholar and were retrieved electronically from the University of Colorado, Colorado Springs library computer system. Of these studies, 18 were excluded because they lacked a discernable definition of gamification. The definitional terms used in the remaining 29 articles were divided into three categories: method, context, and purpose.

In this definition, the term *game design elements* (GDE) is not intended to describe a single method.

Defining Gamification by Method

A matrix of the method descriptors used in the 29 papers is shown in Table 1. There is significant commonality in these methods, but this commonality becomes even more apparent when viewed through the lens of the gamification definition proposed by Deterding, Khaled, Nacke, and Dixon (2011, p. 2): “the use of game design elements in non-game contexts.”

In this definition, the term *game design elements* (GDE) is not intended to describe a single method, as was Denny’s *game elements*. Instead, it incorporates five distinct GDE levels to be applied in
The gamification process: game interface design patterns, game design patterns and mechanics, game design principles and heuristics, game models, and game design methods (Deterding, et al., 2011).

Each of the method descriptors included in Table 1 can be mapped to one or more of the GDE levels, as shown in Table 2. This mapping suggests that all of the method descriptors used in the 29 articles can be subsumed into the concept of GDE proposed in the Deterding, et al. (2011) definition.

**Defining Gamification by Context**

A similar analysis can be performed on the designated contexts for each of the definitions, which are listed in the upper portion of Table 3. With the possible exception of four of these contexts: web interactions, websites/software, solving problems, and the addressed product, each context is simply a rephrasing of the term *non-game contexts*, included in the Deterding, et al. definition (2011). Furthermore, it is arguable that the four possibly-excluded contexts, as used by their respective authors, also fall under the auspices of non-game contexts. This suggests that for definitions including only a method and a context, the Deterding, et al. (2011) definition is the de facto standard, as it is broad enough to include all—or nearly all—of the methods and contexts used.

<table>
<thead>
<tr>
<th>GDE Levels</th>
<th>Method-based descriptors</th>
</tr>
</thead>
<tbody>
<tr>
<td>Game interface design patterns</td>
<td>game elements, game-inspired elements, computer-game elements, video-game elements, game features, rewards/rewards systems, gamelike activities, gameful-experience affordances</td>
</tr>
<tr>
<td>Game design patterns and mechanics</td>
<td>game features, game dynamics, game patterns, gamelike activities, game principles, gameful-experience affordances</td>
</tr>
<tr>
<td>Game design principles and heuristics</td>
<td>game features, gameplay mechanics, video-game mechanics, game dynamics, gamelike activities, game principles, game patterns, gameful-experience affordances</td>
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<tr>
<td>Game models</td>
<td>game principles, game patterns, gameful-experience affordances</td>
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<tr>
<td>Game design methods</td>
<td>game thinking</td>
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</tbody>
</table>
Defining Gamification by Purpose

Huotari and Hamari (2012), however, argue against the Deterding, et al. (2011) definition because it focuses on method instead of purpose. While purpose is a consistent aspect of gamification definitions—15 of the 29 studies included a purpose descriptor—their argument against method appears to be directed against the single method game elements, instead of the more comprehensive GDE.

A list of the purpose descriptors is shown in the lower portion of Table 3. All of these descriptors directly involve the user, either in prompting the user to act or in improving the user’s experience with the gamified product. These are consistent with the importance of gameful experience and the user’s value creation in Huotari and Hamari’s (2012) definition and with Nicholson’s (2012) user-centered framework.

While purpose is a consistent aspect of gamification definitions
A Model of Gamification Design

Any gamified system consists of three essential elements: a user, a non-game task for the user to perform, and a set of GDEs that motivate the user to perform the task. Combined, these form an element-based model of gamification, shown in Figure 1.

The non-game task in the model is used to represent a specific instance of a non-game context. The underlying goal of a gamified system is for the user to accomplish the task, illustrated by the dashed, gray arrow. Within any gamified system, GDEs are used to motivate the user to accomplish the task, illustrated by the two black arrows. Although the terminology differs slightly, this model is consistent with the Deterding, et al. (2011) definition: GDEs are used in a non-game task. Furthermore, the model adequately delineates two aspects of gamification's scope:

1. All gamified systems must have these three elements
2. Any non-game system with these three elements is a gamified system.

Although the elements in the above model are essential for any gamified system, effective gamification depends on the relationships between the elements, which are shown in Figure 2.

User-GDE Relationship

The User-GDE relationship is one of motivation. In terms of the purpose descriptors from Table 3, this relationship includes motivating users, engaging users, and increasing user interest. The conceptual framework for this relationship is the theory of motivational affordances (Zhang, 2008 and Deterding, 2011), supported by self-determination theory (SDT) (Ryan & Deci, 2002). According to these theories, motivation is afforded when the GDEs align with user abilities, allowing the user to fulfill the basic psychological needs of autonomy, competence, and relatedness (Deterding, 2011). Inherent in this relationship is the concept that users differ. Accordingly, a set of GDEs that provide strong motivational affordances to one user may prove ineffective for another. Two promising methods for supporting the user-GDE relationship are...
An important aspect of an effective design is integrating the GDEs with the task, instead of merely adding them on (Linehan, et al., 2011). A scoring system that simply counts occurrences, for example, will not help the user establish or maintain a meaningful connection with the underlying Task (Nicholson, 2012). A meaningful GDE-Task relationship can also be supported by providing GDEs that allow users to set goals, and then work to achieve those goals (Linehan, et al., 2011). Additionally, the schedule of rewards is also important. According to SDT, rewards are often seen as controlling, which has a detrimental affect on the user’s underlying valuation of the task (Ryan & Deci, 2002). However, receiving a reward for having achieved something worthwhile can potentially affirm the user’s competence, which would have favorable results (Dichev, et al., 2014).

**Like users, tasks are not created equal.**

**User-Task Relationship**

The relationship between the user and the task is summarized by the word *valuation*. The more value the user places on the task, the more effective gamification will be. Similarly, the more motivated the user is to perform the task without gamification, the more effective gamification will be. By definition, the user-task relationship is the reason to gamify a system. If the user is intrinsically motivated to accomplish the task, gamification is not required. Therefore, a gamified system provides needed extrinsic motivation for the user to accomplish the designated task. It is important to note that even if the gamified system is intrinsically motivating to the user, this

user-centered design (Nicholson, 2012) and adaptive gamification (Monterrat, et al., 2014). Besides accommodating different user types, these methods also increase the challenge associated with the GDEs as a player’s mastery increases (Lee & Hammer, 2011).

**GDE-Task Relationship**

Fundamental to the GDE-Task relationship is the task itself. Like users, tasks are not created equal. The best tasks for gamification are those that have intrinsic value to the user (Deci, et al., 2001). For example, a gamified fitness tracker will be more successful if the user desires to become more fit, and will be even more successful if the GDEs are designed to reinforce that value. Of the purposes listed in Table 3, the GDE-Task relationship is crucial in establishing a gamelike experience. Towards this end, Aparicio and his colleagues (2012) propose a four-step process for effective gamification.

1. Clearly identify the main objective (Task)
2. Identify other objectives that would be interesting to users. These objectives form the foundation upon which the game mechanics are built
3. Select game mechanics (GDEs) that simultaneously support the main objective, the game objectives, and the basic psychological needs of the users
4. Assess the effectiveness of the design

motivation is afforded when the GDEs align with user abilities, allowing the user to fulfill the basic psychological needs of autonomy, competence, and relatedness (Deterding, 2011).
motivation is directed towards the GDEs and not to the task itself. In other words, the intrinsically motivating GDEs serve as extrinsic motivators for the task. According to SDT, a gamified system built entirely on extrinsic motivators will decrease a user's inherent motivation for the task (Ryan & Deci, 2002). If the GDEs are removed, the user will likely be worse off—in terms of being able to accomplish the task—than before the gamification was added (Nicholson, 2012). The underlying theory for this relationship is the SDT sub-theory organismic integration theory (OIT). The goal for long-term effective gamification is not just for the user to accomplish the task, but also for the user to internalize or integrate the task. This is more likely to be accomplished when the gamification system allows for the basic psychological needs of autonomy, competence, and relatedness to be met.

Treasure Hunters: A Case Study

Gamification is not a game, yet when it is applied to an online course or a business's rewards program, it employs game-like properties to increase participation and engagement. To illustrate how gamification can transform an existing course or system into a game, the authors analyzed a case study conducted by Calongne (2005a; 2005b) that featured the design, implementation and assessment of a Treasure Hunter Game to strengthen online learning.

One goal of the study was to reduce the fear that students experience when working in online teams and to strengthen the final project, which was developed by small groups of 3-4 members during two 5.5 week class. The software project management class met fully online while the software requirements engineering class used a hybrid or blended learning model and met one night a week on campus and the rest of the weekly activities were held online. In the hybrid model, students attended a face-to-face class once a week for three hours, and completed their assignments and class discussions online using Blackboard, a learning management tool.

a gamified system provides needed extrinsic motivation for the user to accomplish the designated task.

The problem noted with these classes stemmed from student reluctance to begin work on the team project. Both classes developed team projects: 1) the hybrid class developed a software project management plan with a detailed schedule, an organization breakdown structure, a work breakdown structure, a strategy for defining cost accounts and related elements to support a complex software development project; and 2) the online class developed a software requirements specification with a lifecycle requirements traceability matrix. Working together in groups was a vital part of the career-oriented curriculum as it provided life skills suitable for future work in software engineering. Mapping the course assignments to the game mechanics required preserving the curriculum goals while measuring that the students were developing the desired skills and competencies.

Working together in groups was a vital part of the career-oriented curriculum
In past online and hybrid classes, new students who were unfamiliar with the team project format dreaded working in online classes on the team projects. The instructor noted that they were slow to get oriented and begin the team activities, and spent much of the first few weeks reflecting on the requirements and their individual needs. The learners provided excellent posts during the first week's introductions, but for some students, the difficulty in coordinating team activities reduced the quantity of discussion posts and the energy level seemed to plateau. Past class offerings used different strategies, including assigning students to teams and allowing students to form their own teams. The problem with either team formation strategy was that the team progress was slow and project delays had the risk of increasing stress later in the term and turning the project's activities into a heroic effort on the part of the project's integrator. Using gamification design in the online course rubrics offered opportunities to reduce anxiety, encourage early teamwork and remap the perceptions and beliefs on the value of online teamwork. It is these values and beliefs combined with the focus on completing the project tasks that illustrate the power of Wilson's models as noted in Figures 1 and 2. Without understanding the perception of learners as players, and finding mechanisms to support their fears and support skill development through routine feedback; the game might have been a light-hearted activity rather than a new way to think about the utility of teamwork in online games.

Gamification Design: Metaphors and Game Mechanics

The game design process featured identifying game metaphors that fit the values and needs of the students (what students wanted) with the necessary tasks (curriculum and course assignments). The game mechanics offered rewards of value to the students (in this case, gold coins) that had a one-to-one relationship with the rubrics and point values used to evaluate progress and assign grades in the course. For example, a 25-point assignment was worth 25 gold coins. Partial completion of the task could earn fewer coins, similar to incomplete work on a class activity. In addition to these direct measurements, the game featured incentives that were advertised and available to each player to encourage the learners to extend themselves as they tried different ways to communicate, collaborate, complete the project tasks and integrate their individual efforts into a cohesive document.

Gamification design in the online course rubrics offered opportunities to reduce anxiety, encourage early teamwork and remap the perceptions and beliefs on the value of online teamwork.

While games may encourage awareness and energy through the perception of competition, in online classes that do not grade on a curve, striving for excellence is not limited to the top percent of the class. Yet seeing progress over time and the relationship of user needs with tasks as they were completed creates an energy that adds to the level of excitement in a game. Deci and Ryan (2000) noted that reinforcing a pressure to win may reduce the intrinsic motivation. To reinforce the design to foster lifelong team skills,
the players needed a sense of control and autonomy in the game's progress and ownership of the game.

The Treasure Hunter’s Report offered progress checks, yet masked the identity and relationship of players through the use of non-player characters (NPCs) added to the class ranks. Protecting the participants' right to privacy and encouraging collegial bonhomie across the different teams were also factors in the gamification design. As a result, incentives for supporting and mentoring other classmates shifted the energy from an overemphasis on the product and the completion of each task to understanding the process of project development and synthesizing it.

Since the classes featured a mix of senior and new students, it was a challenge to assess what each student wanted for rewards prior to class, so a common value system was selected and approved by the class during the first week. When asked during the first class for a preference, they unanimously agreed to use gold and the Treasure Hunter's Game was launched. Other metaphors included a Dragon's Hoard, which described the piles of gold coins as they accumulated, and reputation titles as these metaphorical piles grew taller. When students offered insights that were noteworthy, the instructor typed or said Ka-ching! in the feedback, and described the sound of coins flowing into their coffers as she addressed mastery of the concepts.

While it was easy to map gold rewards to discussion posts and normal course activities, to encourage the process as well as good project development practices led to the need for more granular measurements such as: proposing ideas, mentoring discussions, keeping the team updated on the project’s status, taking charge of specific sections of the project, and integrating the team’s efforts into a cohesive document. This expanded list of measurements added to the instructor's workload, yet took some of the subjectivity out of assessing each player's performance prior to delivery of the final project. Rewards for completing early work, mentoring others and demonstrating leadership exceeded the normal classes’ point values, requiring them to be tracked separately in an instrument called The Treasure Hunter's Report. So the game’s scoring system mapped to the course's gradebook, but offered more extensive measurements and exceeded the course’s total points. To ensure players needed a sense of control and autonomy in the game’s progress and ownership of the game.

FERPA compliance, each player provided a game alias that was unknown to the other students. The instructor added a variety of game non-player characters (NPCs) to the list with at least two at the top, two in the mid-range and two at the bottom. Using a “run with the pack” competition strategy
modeled after the animal kingdom, the goal was to have an unknown set of NPCs encouraging the top, bottom and mid-range players to continue to strive for excellence. The Treasure Hunter Report featured each student who participated in the game (all but one in the hybrid class and all of them in the online class) and the NPCs, but without the students realizing that some of the names were not classmates. This was important to preserve anonymity and to encourage players at all levels to strive for excellence.

**Analysis of the Treasure Hunter Case Study**

The evaluation of the collected data focused on studying whether the course and learning objectives were met and if they satisfied the program outcomes. The goal was to strengthen two fast track graduate classes and foster better team experiences. As the game centered on the use of normal class activities using game-based metaphors, the course assessment method was a natural choice for evaluating whether the game constructs met the desired course outcomes. The Treasure Hunter’s Game had five goals in addition to the course objectives:

1. participation early and often in the course
2. encouraging contributions with substantive content
3. promoting collaboration and team communication skills
4. providing traceability for individual activity on the team project
5. encouraging successful team outcomes with measurable competencies

Since the number of graded measurements grew from weekly assignments to over 25 measurements, the students were free to work ahead or to spend more time on desired activities, and in response, their treasure grew and their game status rose as they progressed through the team activities. A set of game titles mapped to the different reputation levels, giving the gamers roles and a way of characterizing and visualizing their accomplishments. The energy shifted from the perception of routine course work to their demands for more opportunities to earn gold and faster publication of the treasure report.

The goal was to strengthen two fast track graduate classes and foster better team experiences.

**Case Study Results**

The results are separated by each goal and type of class delivery method, which featured a hybrid class that met one day a week in the classroom with the discussions and activity online, and a fully online class. The difference between them featured the ability for the hybrid class offering of the software requirements engineering class to hold a face-to-face team meeting after class while the online class never met in class. They both had the class area in the online course management system for posting team discussions, assignments and their learning artifacts. See Table 4 for a comparison of the results for the hybrid and online class when compared to prior class offerings.

**Goal 1: Increased participation:**

The hybrid class featured the development of a software project management plan and 88% of the 25-member class was enthusiastic contributors,
participating early and often. The remaining 12% rose in the game ranks midway through the course due to delays from medical and other life stresses, and they quickly caught up with the other participants.

The fully online class featured two teams that developed a software requirements specification with a requirements traceability matrix. Of the seven class members, 71% of them posted earlier and with substantive content as compared to past online class offerings. In addition to using the course management system's discussion board and team area, some of the students traveled to meet face-to-face and shared the results of those meetings while others held online voice conferences and invited the instructor. This was not required, but an observation on their preference.

Goal 2: Higher rates of participation

In both the hybrid and online classes, the volume of posts increased 29%-45% as noted in a comparison from prior sections of the same classes and throughout the five weeks of discussion forums for both the hybrid or online course design, and both classes posted their final projects a week earlier than past classes with one notable exception. One exception was noted. In a term prior to the Treasure Hunter’s Game, a
group of software professionals who worked together on the same team worked on a team project and posted their project a week early.

**Goal 3: Collaboration and communication**

Students completed project status reports in prior classes, but due to the time constraints and a poor understanding of how to complete them, most posted only one status report. During the case study, every student in the hybrid and online case study classes completed two of the project status reports, and in the hybrid class, 88% completed a third report, and in the online class, 85% completed a third report. A critic might observe that without the game’s rewards, their desire to keep their teammates informed on the project’s progress might have been less detailed.

**Goal 4: Individual Assessment of Team Project Activities**

While it is common to assign a team grade for a shared project, past classes featured assigned duties on the project and discrete measurements for tracking participation, project decisions, task completion and progress. These individual measurements mirrored the process of project development in the workplace and the status reports featured each team member’s status with regard to the Progress, Plans and Problems related to specific project sections.

Ensuring a cohesive project that demonstrates the use of a replicable process is not easy with novice learners, and they need opportunities to fail and discover alternative strategies. In games, failure is often a barrier to success that is overcome through trying new strategies and learning from past mistakes. These same strategies were used in the project development. In the hybrid class, the instructor played the role of a person who was ill-informed on the project’s goals and process. As the presumed fount of all knowledge, the instructor would offer outrageous advice and give insights into common myths that invade everyday practices.

The students as players were encouraged to point out the problems with these “helpful” tips and to take a leadership role to guide, inform, modify and in some cases, strengthen the process used during project development. In the online class, 85% completed all of the bonus activities, sharing the leadership role and keeping their teams informed on the project’s progress. 88% of the hybrid class completed most of the bonus activities, but not all of them. This may be due to their weekly face-to-face meetings and other mechanisms for sharing information.

**Goal 5: Successful Team Experience and Team Project**

A peer evaluation was completed prior to submitting the project, and on it, each team member rated the contributions of their teammates and noted how they had contributed. These peer reviews were also worth gold coins and provided another perspective for assessing the value of each team member’s contributions. Increased satisfaction and perceptions of the process and value of online teamwork featured highly during the feedback from the class, and over 30% of the participants asked for more quests once the class ended. They did not want to stop playing at the end of the course. While indirect, it was one of the more powerful insights from the experience.
Treasure Hunt Case Study

Conclusions

Linking the process (the game with a team of players) with the product (online learning and the development of the team project) was a great success. In spite of the fanciful metaphors, it was popular, and the students demanded faster progress reports and were eager to see the results of their efforts. Tabulating on the Treasure Hunter Report was a manual process that featured a few strategies to maintain privacy and to motivate the players. As previously mentioned, at each level at least two NPCs ranked with the top, bottom and mid-range players, reinforcing “running with the pack.” To reduce the likelihood of NPC detection, their growth could only advance in a reasonable fashion given the possible measurements and incentives for that week. In some cases, the list was scrambled with the rank order switched from low-to-high or high-to-low while at other times, it featured other elements. Only aliases were displayed and only if they remained anonymous. The team members were “sworn to secrecy” and encouraged to keep their reputation titles to themselves. No one mentioned them in class, except to say that they enjoyed advancing through the ranks and having their accomplishments reinforced. From an instructor’s perspective, implementing the game required planning and steady work. During the last three weeks, the students as players insisted on daily if not hourly reports, and future games of this nature will benefit from an automated gamification process and report generation.

Grades are insufficient catalysts for ensuring great online team experiences. Without recognizing the beliefs and values that learners bring to class as they work on the online team projects, it would be hard to help them remap these perceptions with new perspectives. The game-design elements were simple in the case study and the overhead was mostly in keeping track of the measurements on a spreadsheet and the metaphors for creating energy and excitement in the game.

As Wilson (2015) observed, how the game is designed is only one piece of the puzzle. Motivating the learners, getting everyone energized and hosting a great game requires a great implementation and hard work, at least initially. Once the learners assume ownership of the game, the burden on the instructor shifts and the game feels like an organic part of the class and quite natural.

Linking the process (the game with a team of players) with the product (online learning and the development of the team project) was a great success.

Back to the Future Research

The case study offered individual measurements in the game for team activities, but several opportunities emerged during the assessment phase. For the educational use of gamification, future work could explore the opportunities presented by collaborative gamification to strengthen the team experience through shared goals, measurements, collaboration tasks, group communication mechanisms and in fostering team cohesion for online learning.

Gamification as self-determined learning is a goal within heutagogy, and it presents opportunities for encouraging the development of lifelong learning skills and students as game designers. In past classes,
andragogy was a common learning strategy as students would use trial and error to map their prior knowledge to new experiences and review the content only when their behaviors was not supported.

Several opportunities for future work are indicated. Through gamification, it may be possible to blend how adults learn (andragogy) with self-determined learning (heutagogy) to offer insights on how to enhance knowledge and skill development through online learning. Ethnographic studies that follow the gamers through time and over several courses may discover insights useful for future work. How to transfer the energy and ownership of the game to the students as players through game ownership may lead to interesting research in shared leadership and peer mentorship.

As learning involves certain challenges, future work may explore the strategies for achieving game balance to meet curriculum requirements and how to maintain game balance by keeping the challenge level slightly higher than the skill level of its players. The Flow Model (Csikszentmihalyi, 1975; Hoffman & Novak, 2009) is one instrument for examining the gamer’s perceptions and emotions as they face new challenges and attempt to develop their skills through gamification.

Conclusion

Gamification offers the promise of better online learning experiences with regard to early work and effective teamwork. Through the use of game-based mechanics, it can encourage learners to participate, collaborate and develop effective online team skills. But there are no guarantees that the use of game design in an online course will lead to success.

Future successes in this area will come from careful planning and design; from selecting game mechanics and rewards that map to the beliefs and values of the participants, and for selecting metaphors and game characteristics that support how the players feel about the tasks and their importance. By blending user interaction design strategies with game-based mechanics and a sensitivity for what motivates the participants, achieving the desired outcomes through a great gamification experience is within reach.

Gamification offers the promise of better online learning experiences

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at the Proceedings of the 13th International Conference on Interacción Persona-Ordenador.


Definitions

1. Gamification: the use of game-design elements (e.g. badges, turns, goals, challenges, playtesting) in non-game contexts (e.g. education, marketing, exercise, innovation)

2. Game design elements: the components and mechanics of games, as well as the principles, models, and methods of game design. Examples include: badges, turns, goals, challenges, and playtesting

3. Gamification design model: three essential elements of a gamified system: a user, a set of game design elements, and a task. The model also includes the relationships between these elements: motivation, meaning, and valuation

4. Game elements: the components and mechanics of games, such as points, badges, turns, and limited resources