Journal *of* Arts Science *and* Technology

Volume 9 2016

A PUBLICATION OF THE UNIVERSITY OF TECHNOLOGY, JAMAICA

The Journal of Arts Science and Technology

"Back in the Game":

Using gamification as an engagement tool with Spanish Language learners at UTech, Jamaica

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Abstract

Gamification, the introduction of game design mechanics and elements into non-game contexts, has received growing attention in educational circles owing to its potential ability to motivate and engage. In this paper, we describe the use of select gamification mechanics in an undergraduate Spanish Language class to get students "back in the game" in order to increase their engagement in out-of-class online activities. We used an action research approach with a sample of 139 participants from the Papine campus of the University of Technology, Jamaica for a period of five weeks. Specifically we integrated experience points, levels, challenges and badges within the out-of-class online component of the course in week 9 of the 13-week semester. The results were encouraging as in the five weeks of the gamified course, we found strong evidence of learner engagement in the out-of-class online component of Spanish Language 2. More than 70% of the students accessed and downloaded the reading materials, more than 75% of the students completed each activity given, and approximately 73% of the learners participated in the challenges. Additionally, a cumulative total of five hundred and fifty-nine (559) digital badges were awarded based on learner activity completion or outstanding performance. Although the findings warrant more prolonged research into gamification and learner engagement, the preliminary results hold much promise for the out-of-class online component of Foreign Language courses taught at UTech, Jamaica.

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Keywords: Quizizz, gamification, learner engagement, Spanish, UTech Jamaica, digital badges.

Introduction

Education is highly valued as a mechanism for social advancement and the literature is replete with examples of how higher education institutions have attempted (and continue) to attempt to make education effective. The ubiquitous nature of learning technologies has introduced innovative and stimulating tools and processes to renovate, interchange or complement existing traditional learning tools. A large and growing body of literature describes such tools as including the use of games. Much of the current research has reported games as sparking curiosity, increasing motivation, advancing learning experiences and improving academic outputs (Rigby & Ryan, 2011; Barata, Gama, Jorge & Gonçalvez, 2013).

The impetus and dynamism of games are being investigated in non-game contexts through a process called gamification which, simply put, is the application of game elements to non-game processes such as educational practices (Detering, 2012; Werbach and Hunter, 2015). The use of gamification in business contexts, has undeniably received increasing attention. This stems largely from its apparent facility to motivate participants into desired courses of action by making mandatory tasks and/or routine activities satisfying. The transfer and application of gamification to educational settings seem then to be logical extension, as it has great potential to motivate students in performing routine learning activities that they are normally reluctant to carry out by providing them with non-tangible rewards for their completion.

Since the appearance of gamification on the educational landscape, it has quickly become one of the buzzwords in the field. This brings us to posing the question; what are the benefits of using gamification principles in Higher Education? What we know about the benefits of gamification, is largely based upon empirical studies carried out by North American and/or European researchers. Kapp (2012) and Kovács (2015) propose nine principal benefits of gamification in education. These include increasing learner engagement, encouraging ludic and interactive learning, providing instant feedback, reinforcing learning and increasing time spent on tasks.

Whereas the research on gamification in Higher Education is growing rapidly in North American and European countries, there is need to understand gamifica-

tion and learner engagement in online environments at a local level. This paper seeks to remedy the paucity of local empirical research in the field of learner engagement using gamification. In this paper, we examine how gamification principles impact undergraduate students studying a semester-long Spanish Language course (SPA2010) at UTech, Jamaica. We begin by describing the course which was gamified, discussing the context which led to the introduction of gamification mechanics, and outlining the gamification elements we incorporated into the course. We then discuss the findings and conclude our paper by discussing the essential lessons learned from the gamified course and the implications for other prospective gamified learning experiences in our foreign language course offerings.

The Context

The Spanish Language 2 Course

Spanish Language 2 (SPA2010) is a second-level Spanish course offered by the Faculty of Education and Liberal Studies (FELS). The course is opened to students on the Papine and Montego Bay campuses as well as to students of the community colleges/UTech franchises who have successfully completed Spanish Language 1. Spanish Language 2 is mandatory for all students pursuing degrees in Hospitality and Tourism Management (HTM), Food Service Management (FSM), Chemical Engineering and Pharmaceutical Technology. For students pursuing other programmes of study, the module is optional.

Spanish Language 2 is a 13-week course which covers three comprehensive units and involves more complex grammatical structures, more advanced vocabulary items, and idiomatic expressions than in Spanish Language 1. The module is examined by course-work only; that is, there are no final university-level examinations, rather students are required to engage in a series of in-class assessments which tests their level of mastery in the four language skills of reception (listening and reading) and production (writing and speaking). Spanish Language 2 is a web-enhanced[1], five-hour per week course with four hours dedicated to face-to-face tutorials and one hour devoted to online. The online component (focus of this research project) of Spanish Language 2 is hosted on the Moodle platform and requires students to access the one-hour online tutorial and accompanying online activities during out-of-class hours.

The 2015/16 online resources for Spanish Language 2 comprised a total of fifteen (15) course-related tutorials; five (5) in Unit 1, four (4) in Unit 2 and six (6) in Unit 3. The tutorials were set to be automatically downloaded when clicked for viewing, thus allowing the activity reports to determine how many times the resources were viewed/downloaded. In addition to course-related tutorials, the SPA2010 course incorporated a combined total of nine online activities. Those activities included four assignments which had to be submitted/uploaded to the online platform, two tasks which required students to update their participant profiles and to post to a forum using the target language and three auto-rated[2] quizzes.

Learner engagement (or the lack thereof)

We found that during the first eight weeks of the semester, the Spanish Language 2 course was fraught with learner inertia, poor participation levels and a general lack of engagement with the out-of-class online resources and activities. We primarily consider the classifications and discussions of Trowler (2010) in our determination of learner engagement. Trowler explains that in an attempt to enhance the teaching and learning processes in Higher Education institutions, student engagement has become a high priority focus for analysis and discussion. For her, student engagement is a multidimensional concept (behavioural, emotional and cognitive) which involves students investing time and effort into their academic activities and practices.

For the sole purpose of this paper, we consider students' *non-engagement* (a lack of engagement) and not *negative engagement* (disruptive or rebellious reactions) with the out-of-class online resources and activities. Consequently, we operationally define learner engagement as students' attention, interest, involvement and active participation in the out-of-class online learning component of Spanish Language 2. Additionally, in our discussions, we will use the terms *interaction with, participation in, involvement with* as synonymous terms for engagement with.

To demonstrate the poor levels of student engagement with the out-of-class online resources and activities between weeks 1 and 8, we tallied the data from the Moodle platform using the default Moodle analytics tools via learner access logs, course logs, completion data and activity reports. Our findings showed high levels of online absences, low levels of activity completion and low occurrences of assignment downloads. At the end of week 8, less than half of the students had accessed the out-of-class online component of the course. The Moodle Participants' report

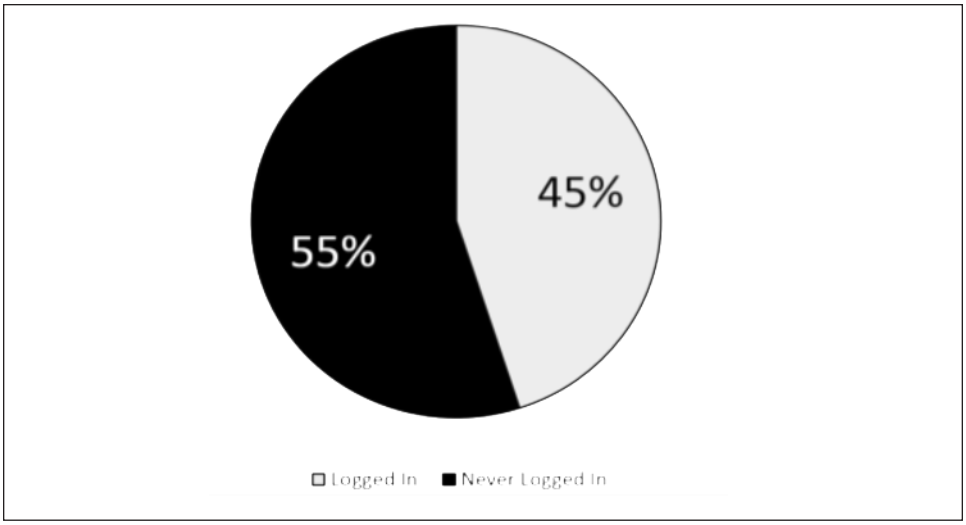

Figure 1. Students' access to the online component (weeks 1–8)

revealed that 76 students (55%) had never accessed the out-of-class online component of the course and 63 students (45 %) had accessed the resources and activities once or more since its implementation at the beginning of the semester. Figure 1 shows the graphical representation of students' access to the online component.

As it relates to students' involvement with the activities, the data showed a similar pattern of non-engagement. The activity and course completion reports regarding the completion of online quizzes, assignments, forum discussions and updating of participant profiles were equally unfavorable. The reports revealed that less than 30% of students completed each of the activities assigned. Please refer to figure 2 for a graphical breakdown of students' completion rates for each online activity during weeks 1–8.

Access levels to the online tutorials and resources were also very poor. Of a possible 834 downloads for Unit 1 resources, the data shows that 153 (18%) students accessed and downloaded the tutorials. Units 2 and 3 followed a similar trend with 145 downloads of a possible 556 (26%) and 138 of a possible 695 downloads (20%) respectively.

Given the dismal levels of interaction with the online content, bearing in mind the documented successes and potential of gamification in Higher Education and in our effort to get learners "back in the game", we decided to gamify the last five weeks (weeks 9–13) of the Spanish Language 2 course.

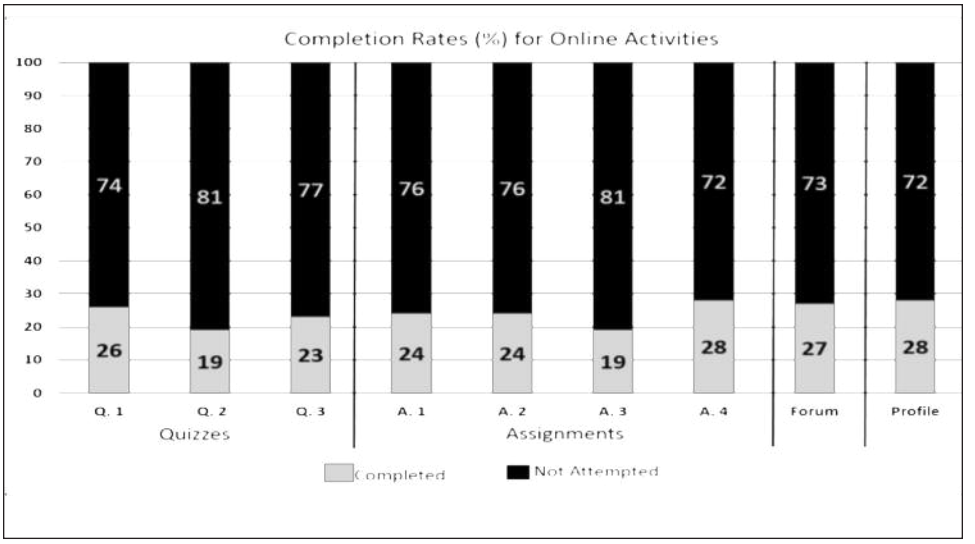

Figure 2. Students' activity completion rates (weeks 1–8)

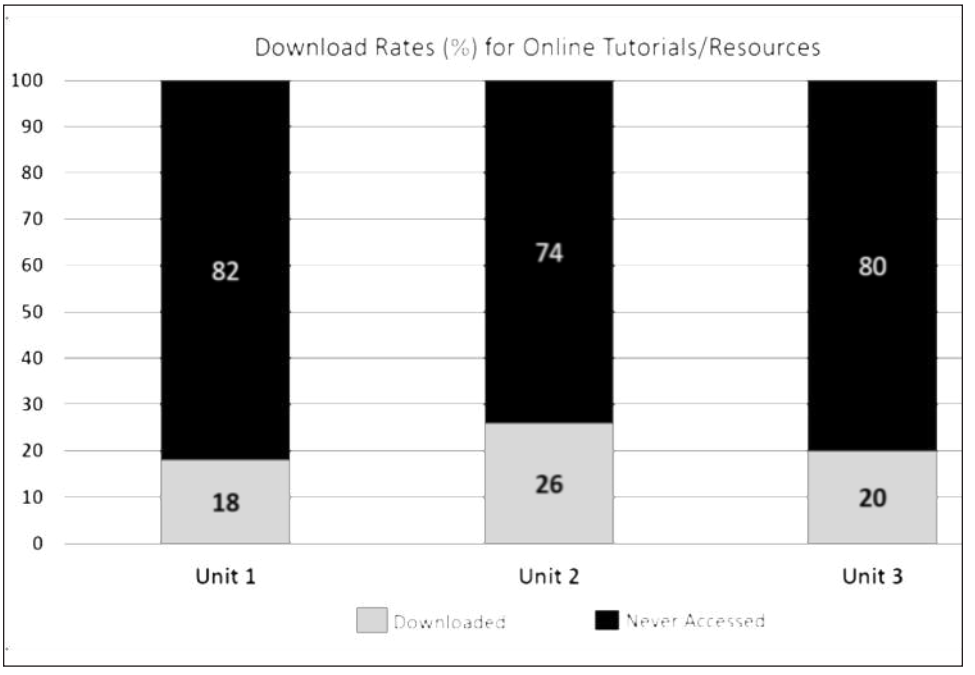

Figure 3. Students' resource download rates (weeks 1–8)

Research objective

Learner engagement, especially in eLearning contexts has become an increasingly important area to Foreign Languages. One of the more currently critical discussion on how best to engage learners in online environments is that of applying gamification mechanisms to educational processes. Bearing these in mind, the principal purpose of this research was to determine if the gamification of the Spanish Language 2 course could increase student engagement in their out-of-class online activities.

Research question

Can the gamification of the Spanish Language 2 course increase students' engagement in their out-of-class, online activities?

Methods

Study Design

In order to answer our research question of whether or not the presence of gamification mechanisms in Spanish Language 2 could increase students' engagement levels in their out-of-class online activities, we employed an educational action research approach to the study. In education, Action Research (also called Practitioner Research and Classroom Research) is a systematic inquiry carried out by practitioners in their own educational contexts in order to develop their practice and optimize their learners' experiences (Sagor, 2000). According to Efron and Ravid (2013) Action Research has become an established feature in educational contexts because it is seen as a viable framework with a powerful strategy for transforming and refining educational processes. McNiff (2016) maintains that Action Research problematizes academic content, concepts, and contexts in an attempt to improve educational processes. Such a problematization involves practitioners probing "how do I….?" questions in order to initiate action in their practice.

Action Research is cyclic and comprises four (4) stages of planning, acting, observing and reflecting. For practitioners, the Planning stage involves identifying the problem at hand, sourcing information to understand the issue more, devising

probing questions and developing a plan of action. Phase 2, the Action phase, speaks largely to testing the plan of action and collecting emergent data. Stage 3 is the Observation stage and this is where practitioners scrutinise the findings so that they can make sense of what the research tells them. The final stage in the cycle is that of Reflection. In this phase, practitioners evaluate the completed cycle, implement the findings or make modifications and revisit the process.

In gamifying Spanish Language 2 using Action Research, we began the process by accepting that we had a problem with students' lack of engagement in the out-of-class online component. We had in-class discussions which led us to believe that despite the attractive course interface, the detailed visual guidelines and the frequent reminders, the out-of-class online component still lacked a certain pull factor and requisite appeal to entice the students to the site and keep them actively engaged while there. We considered gamification as a possible solution, devised a plan of action guided by the literature and other studies conducted in Higher Education institutions. We implemented the plan during the final 5 weeks of teaching, activated the Moodle learning analytics tools, collected and analysed the data for further reflection and action. Figure 4 is a diagrammatic representation of the Action Research cycle.

Figure 4. The Action Research Cycle. Original source: https://edresearch.nmsu.edu

Population and sampling

For the 2016/16 academic year, a total of 162 students were registered for Spanish Language 2. This number included students studying on the main campus and in three community colleges which are a part of the UTech, Jamaica franchise. Because the students in the community colleges operate on a different cycle from those on the Papine campus (UTech, Jamaica's main campus), their data were not included in presentation and discussion of the project. As a result, of the initial cohort of 162, the final sample size comprised 139 participants and was representative of all groups (five in total) taught on the Papine campus.

Data collection

The data were collected using the Moodle learning analytics and reporting tools and the class-level reports generated by the multi-player on-line quiz *Quizizz*. We used Quizizz to create the challenges in the gamified component of the course. Learning analytics, a newcomer in the educational assessment camp, provide invaluable insights into the progress and participation of learners (Bain and Drengenberg, 2016). Swan (2013) makes reference to learning analytics as measuring, collecting, analysing and reporting data about learners and their learning environments. She further explains that learning analytics are critical in eLearning environments where vast amounts of data are generated.

The ability to view and analyse participation trends, submissions patterns and log-in tendencies among other developments can facilitate the optimisation of students' online learning experience. For the gamified Spanish Language 2 course, the learning analytics and reporting tools included students' logs, activity and course participation reports for documenting the number of tutorials viewed/downloaded, quizzes completed, profiles updated and forum content posted.

Research Ethics

Two foremost principles of educational research ethics dictate that participant informed consent should be given prior to the research commencement and that the participants' identities must be protected (Norton, 2009; Cohen, Manion & Morrison, 2013; McNiff & Whitehead, 2016).

Because engagement with the online component of the Spanish Language 2 was compulsory and not at all optional, all students were expected to participate in the activities. Bearing this in mind, students were informed that their engagement in the course would be documented to help in improving their learning experiences and their permission was sought regarding the documentation of said participation. All students (139) in the five groups agreed to the documentation and analysis of their participation levels giving their consent in writing.

The Moodle analytics reporting tools are directly linked to "named posts" and as such the reports tend to generate detailed student data which include students' names, their identification numbers and user profile pictures (where applicable). To ensure that learner anonymity was preserved, all identifying markers were removed in the presentation and discussion of the research data. Additionally, letter/number pseudonyms were used instead of students' real names and avatars were used instead of the user pictures where appropriate. Students were duly informed of these processes both orally and in writing.

Gamifying Spanish Language 2

In order to make the course more appealing, we gamified it using the most popular gamification mechanisms. These were experience points (XP points), levels, challenges and badges.

Experience points and levels

Werbach and Hunter (2015) describe levels as defined steps in player progression and points as numerical representations of advancement. Both levels and points signal to the participants exactly where they are in the gamified system and act as indicators for rewards or other mechanisms. The Level Up! Moodle block was used to integrate levels and experience points in the gamified Spanish Language 2 course. A total of ten (10) levels were implemented in the gamified version of the course and each level had varying experience points. Students were awarded experience points for activities completed, resources read/downloaded, posts made and so forth. All students begin the journey at Level 1 with 0 experience points. As students progressed through the resources and activities they had the opportunity of levelling up, working their way up to 15,000 experience points at Level 10. When

Table 1: Levels, descriptions and experience points

Level	Category/Description	XP Points
1	El Recluta	0
2	El Aprendiz	1,500
3	El Contendiente	2,800
4	El Practicante	3,500
5	El Profesional	4,500
6	El Especialista	5,500
7	El Experto	6,500
8	El Maestro	8,000
9	El Veterano	10,500
10	El Inmortal español	15,000

students successfully level up, they received notification of having peaked at the level in question. Further to the experience points and levels, we added a "game ambience" by assigning each level with a unique category title using cognates[3] in target language. Table 1 presents the levels, category names and corresponding experience points.

Students accessed their experience points and level status after logging in to the course. Each student would see his/her current level and corresponding experience points. When students levelled up at levels five (5) and ten (10), they received an "experience" badge based on the level's description. On the Level Up! block, students were able to view their individual level and corresponding experience points. If they clicked "view the ladder" they were able see their rank against the other participants in the course. Figure 5 shows students' view of the Level Up! block when they log in to the course.

Challenges

The push to engage students with the course resources and activities in SPA2010, revolved around the challenges created. For Werbach and Hunter (2015), challenges are tasks which require effort to be solved or completed.

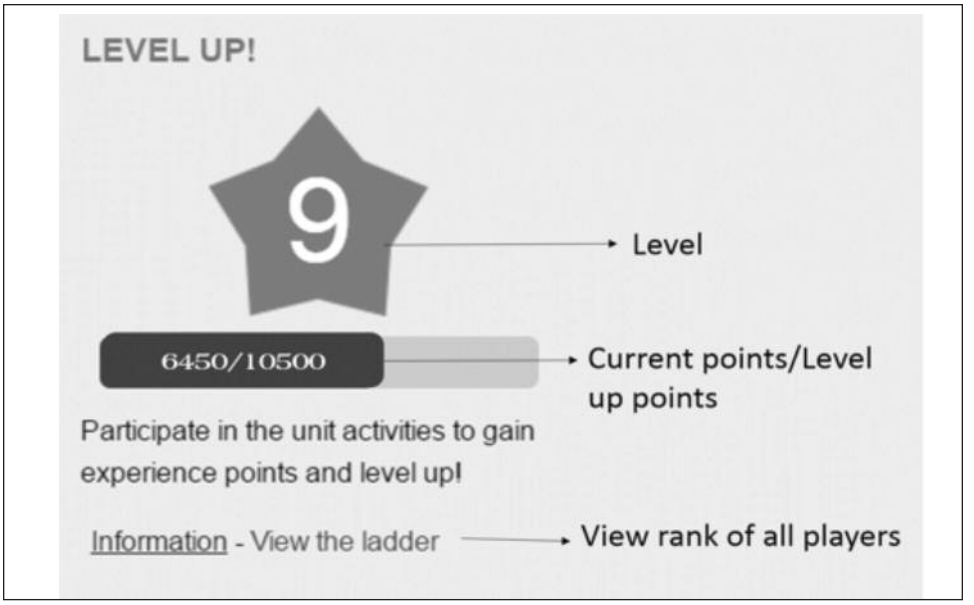

Figure 5. Screenshot of the Level Up! Block from the students' view

In the Spanish Language 2 course, three challenges were created under the umbrella of a Championship (*El Campeonato*), an international competition with three (3) tournaments (1 from each unit). The tournaments were given game-appropriate names and descriptions. Tournament 1 was named *Luchas Mentales* (Mental Combat), Tournament 2 was titled Escena del Crimen: La Academia (Crime Scene: The Academy) and Tournament 3 was called *Situaciones Médicas* (Medical Situations).

The tournaments were created using Quizizz (http://quizizz.com), a multiplayer online quiz. In order to play each tournament, players entered a 6-digit code and their game name (First Name + Surname Initial+ dash + 1st 3 letters of teacher's Surname – e.g. AllisonS-McK). Each tournament contained between twelve (12) to fifteen (15) questions with timings between ten (10) and twenty (20) seconds for each question. The tournaments relied on both accuracy and speed and students were allowed to enter as often as the desired until the tournaments closed at the end of the semester. Because the challenges could be played as often as a participant wanted and because they were linked to the levelling up process and experience points, repeat challenges received no more than two (2) experience points.

A pedagogic strategy that we used to invite students to access the tutorials and

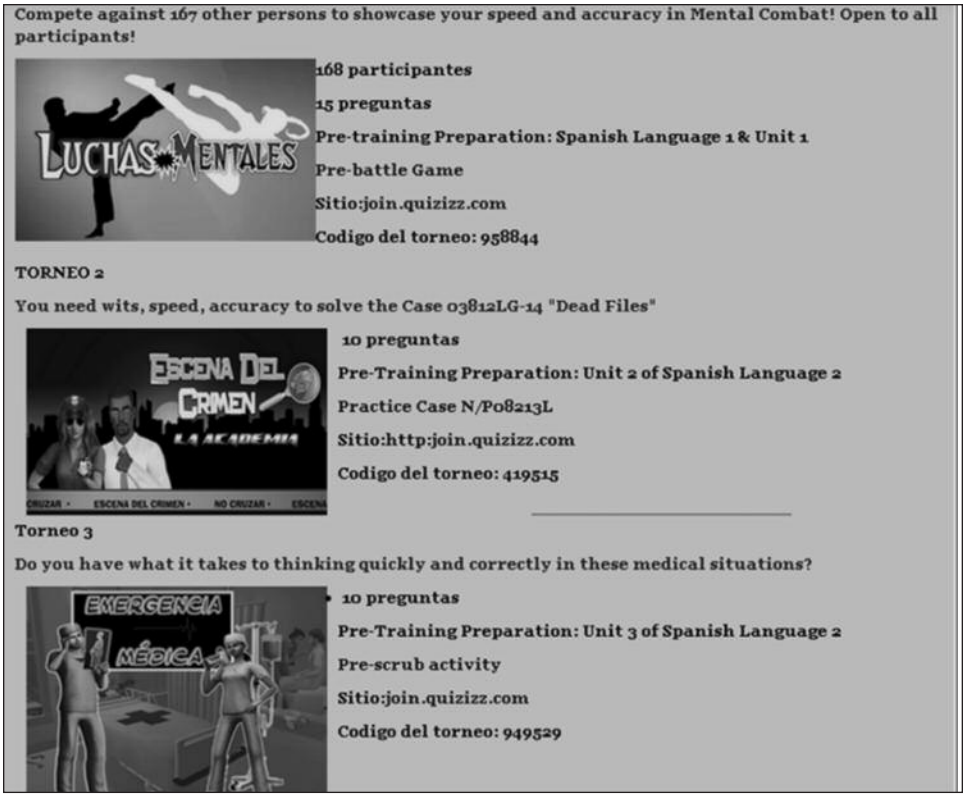

Figure 6. Students' view of the game tournaments

activities not done before, was to integrate them as pre-requisites to the tournaments. For each tournament, we indicated that, if not already done, there were pre-training sessions (course-specific tutorials/resources) or pre-game challenges (the unit-specific quizzes) to be completed. Figure 6 shows the presentation of the tournaments from the students' perspective.

Badges

We also incorporated badges (one of the common elements of games) into the SPA2010 course. Badges, as explained by Werbach and Hunter (2015) are visual representations of achievements within the gamified process. We created a total of seven (7) digital badges for the Spanish Language 2 course which were awarded

based on the completion of specific tasks. Two badges (*El Profesional*/Level 5 and *El Inmortal español*/Level 10) were awarded based on levelling up in the course. The other five badges were awarded for updating participants' profile with picture and description using the target language, successfully posting to the forum and for successfully completing quizzes and assignments. The badges were created using the site http://makebadg.es/. Students received email notification of awarded badges. They were able to view the badges either from their profile page on the course home page which showed them the most recent badge earned. Figure 7 a synopsis of the badges awarded in the gamified course and their descriptions.

IMAGE	NAME	DESCRIPTION
	The Profiler	For successfully completing all components of your participant profile.
	The Socialite	For successfully posting to the forum and responding to one other participant using the target language.
	Inmortal Español	For reaching the ultimate level and achieving Spanish Language Immortality (Level 10).
	Quiz Master	For completing all online quizzes with a grade of 60% and above.
	Bookworm Supreme	For accessing/downloading all online tutorials and resources.
	Game Champion	For achieving one of the top 10 positions of a total of 139 competitors.

Figure 7. Game badges used in the gamification component

Findings and Discussion

In investigating whether or not gamification mechanisms could engage students more in their out-of-class online Spanish activities at UTech, Jamaica, we used an Action Research framework and gamified the Spanish Language 2 course between weeks 9 and 13 (the final 5 weeks of the semester). We selected the most popular elements of games (experience levels, badges, points and challenges) and interweaved them into the Spanish Language 2 online component. In this section of our report, we will discuss what the data revealed about students' engagement levels regarding learning resources downloaded, activities completed, levels attained, tournaments played and badges awarded.

Number of resources downloaded

In order to successfully complete the online tutorials and satisfactorily complete the online activities, students were given tutorials/resource materials. Each week, they were reminded in the in-class session about the online tutorial and activities and the reminders were also posted in the News and Announcements forum to which all students have forced subscriptions. Despite the reminders and the insistence of lecturers, less than 30% of learners accessed the learning resources.

When the course was gamified and the learning resources were interwoven within the challenges to be completed, the number of resources downloads increased. Unit downloads grew from an average of 30% of the participants to an average of 76% of students downloading the learning resources. This represents a numerical difference of 48%.

We used the increase in tutorial downloads as a positive indicator of engagement with the learning material as students had to consult the tutorials in order to carry out the accompanying tasks. Figure 8 represents the pre- and post-gamified download figures of the tutorials and learning resources.

Number of activities completed

Similar to the increase in resource downloads, activity completion levels also steadily rose in the gamified component of Spanish Language 2. Although not all students completed the online tasks, the number of participants who completed activities rose significantly for each task. Figure 9 shows the comparison between activities completed in weeks 1–8 (pre-gamified course) and in weeks 9–13 (gamified course).

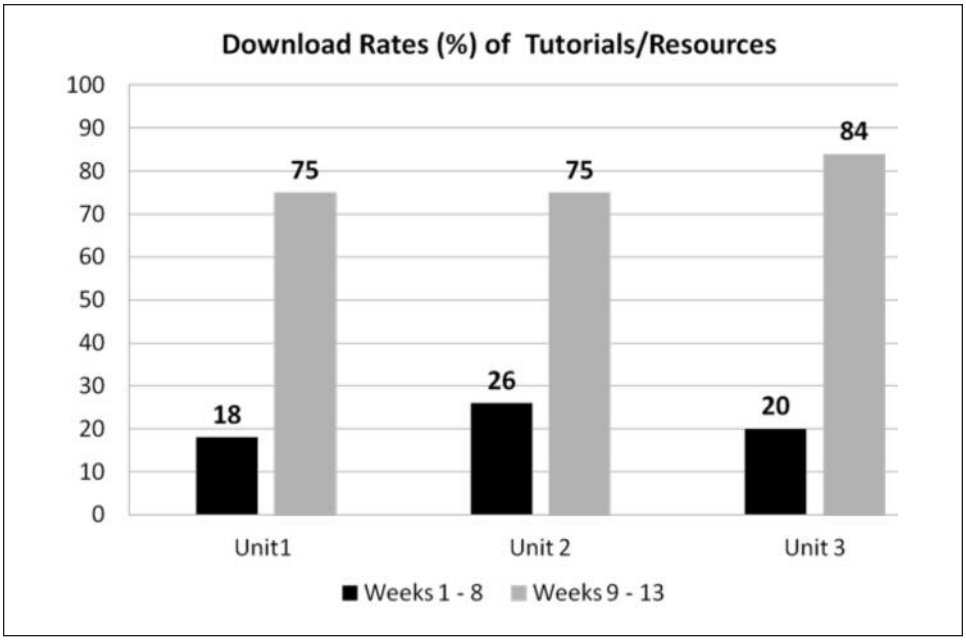

Figure 8. Download rates before and after gamification of the course

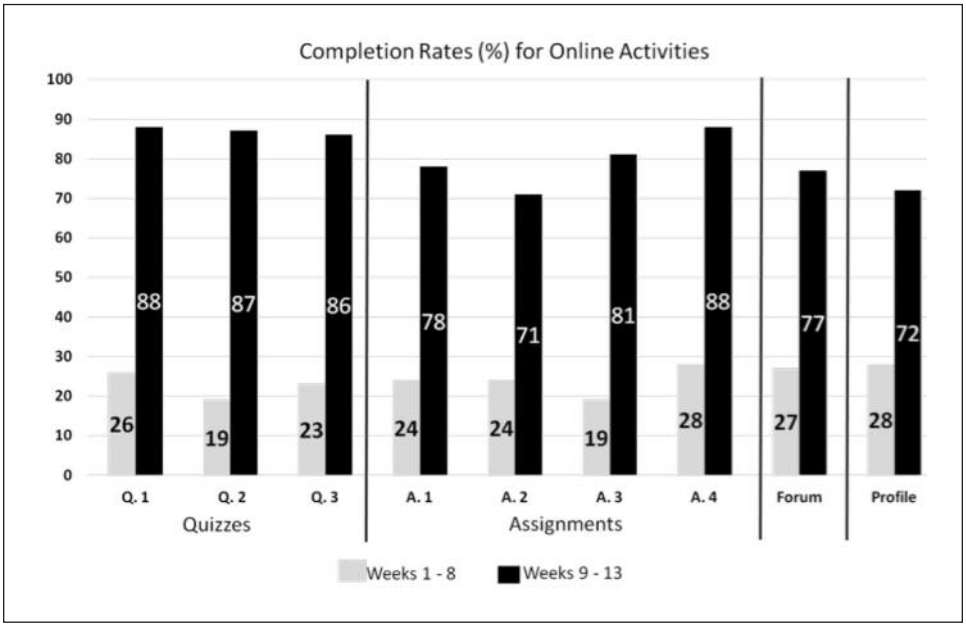

Figure 9. Completion rates for the online activities in the non-gamified and gamified components

Levels of achievement

We used achievement levels and their corresponding XP points as another indicator of students' heightened involvement in the gamified course. Reaching higher levels suggested that more resources were read/downloaded, more activities were completed and more challenges were undertaken by the Spanish Language 2 students.

The Spanish Language 2 ladder revealed that 49 (35%) students reached the ultimate level of *Inmortal español* (Spanish Immortal) at Level 10. A little over a half of the class (73 students or 53%) successfully climbed the progression ladder reaching between Level 5 (*El Profesional*/The Professional) and Level 9 (*El Veterano*/The Veteran). Seventeen (17) students finished between Level 1 (*El Recluta*/The Recruit) and Level 4 (*El Practicante*/The Practitioner).

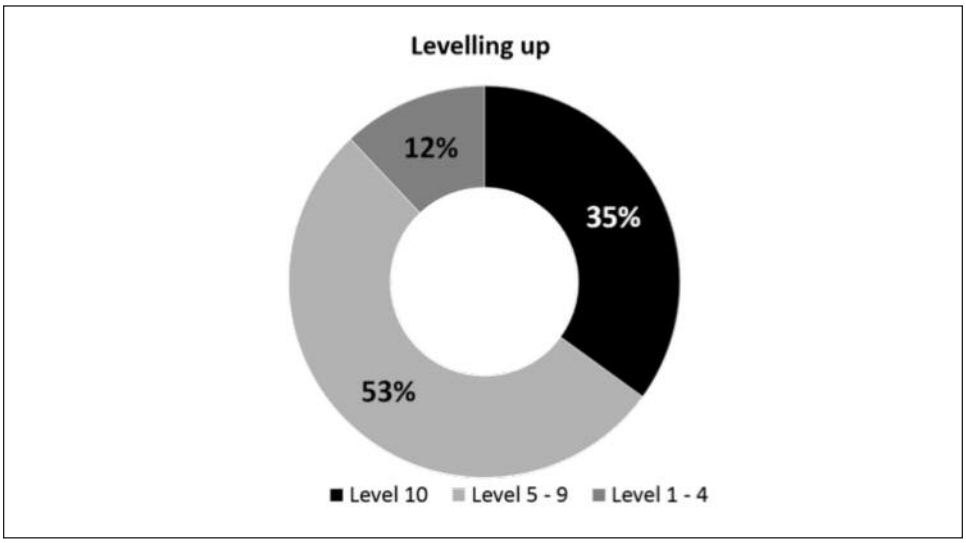

Figure 10. Students' levelling up details.

Number of challenges attempted

We implemented three multi-player quizzes using them as challenges in the gamified course. To determine students' engagement levels with the challenges we created, we considered the number of games played and the frequency of repeat play. We deemed repeated play patterns an indication of active participation especially since the instructions to students informed them that a) the games demanded accu-

racy and speed and b) they could participate as often as they wished until the tournaments were closed. We retrieved the data regarding number and frequency of games played from Quizizz. Quizizz generates game-related reports which document students' performance at the class and individual levels.

The Quizizz reports showed that 92 students (66%) played all three tournament games, 36 students (26%) played two of the three games and 11 students (8%) played only one of the games. Furthermore, the Quizizz game report indicated that 86 students (62%) played each game more than once. Of that number, 73 students (85%) played each game more than 3 times before the tournaments closed.

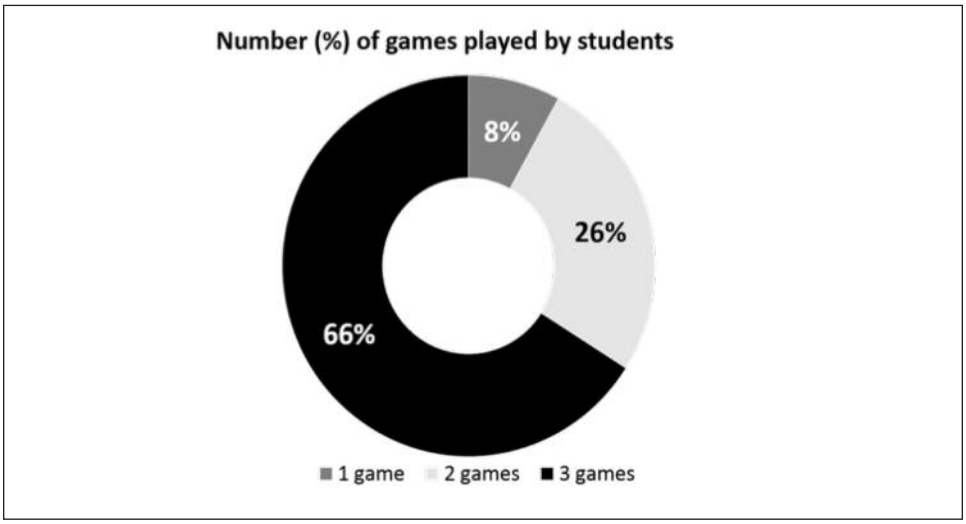

Figure 11. Participation rates in the multi-player challenges

Number of badges issued

Badges were awarded based on task completion or on outstanding performance within the online component. Issued badges suggested to us that students remained actively engaged in the out-of-class online component of the course. A total of 559 badges were awarded in the five (5) weeks that the course was gamified and were awarded to students who successfully completed specific tasks or to those who performed exceptionally well in the tasks they carried out. Table 2 provides a breakdown of the badges awarded. For a description of the criteria for awarding the badges, please refer to figure 7.

Table 2. Number of badges awarded

Badge Name	No. Awarded
The Profiler	114
The Socialite	109
Quiz Master	82
Bookworm Supreme	73
El Profesional	122
El Inmortal español	49
Game Champion	10
	559

Conclusion

Although the results of the research need to be interpreted with caution and the use of gamification in Foreign Languages at UTech, Jamaica warrants research which extends beyond a five-week period, we find the results from the project to be encouraging. Overall, the findings of the research support the idea that gamification does increase learner engagement. Indeed, the results point to students as being more actively involved in their out-of-class online activities as evidenced by the number of resources viewed/downloaded, the number of quizzes completed, the number of challenges attempted, the levels reached and the number of badges awarded.

As a critical component of the reflection phase of the action research cycle, there is need for a "rinse and repeat" element. In the critical reflective stage before a new cycle is initiated, there is need to address the matter of motivation – the types which drive students and how to capitalize on intrinsic motivators while encouraging learners with extrinsic awards. Additionally, it would be remiss of us as researchers, not to contemplate a longer research period to test the gamified course[s], or to engage more groups of students for testing and analyzing the true limits of gamification. Furthermore, students' profiles would need to be generated so that practitioners can have a more comprehensive insight of learners. Finally, to truly

discuss and contemplate the use of gamification as a possible standard at UTech, Jamaica, further research must incorporate time-on-task analyses as well as students' feedback regarding their experiences and attitudes to gamification. These considerations must be studied before concrete associations between learner out-of-class online engagements and gamification principles are more clearly understood.

Taken together, the results of this mini-research provide important insights into the use of gamification in Foreign Language courses at UTech, Jamaica. Indeed, we have found that gamification is a very strong contender among a lecturer's artillery of pedagogical tools as a way of increasing learner participation and engagement.

End Notes

1. The university's Office of Distance Learning (ODL) defines web-enhanced courses as those which promote use of online tools and online interactions, (11-30% of sessions) to supplement face-to-face sessions and may include online components as part of formal assessment.
2. Auto-rated quizzes (also called auto-graded or self-check/self-marking quizzes) are objective type assessments (multiple choice, cloze, matching, short answers, true/false) which are automatically graded. Students may also receive feedback comments.
3. Cognates are words in the target language which are similar or identical to words in the native language.

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