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**“Using Mobile-accessible Quest-based Learning to Increase Asynchronous Participation and Motivation among EFL University Students”**

Tesis para optar al grado de Magíster en Innovación en la Enseñanza, Aprendizaje y Evaluación del Inglés

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## List of Acronyms:

CEFR : Common European Framework Reference for Languages.  
EFL: English as a Foreign Language.

**Abstract:**

Blended learning in EFL settings combines asynchronous online instruction with communicative face-to-face classes. However, motivating learners to study independently can be challenging. Online platforms can be perceived as boring and tedious, and students may have limited access to a computer at home. This action research aimed to use mobile accessible quest-based learning to increase participation and motivation in asynchronous study among adult EFL learners. A custom built learning tool was created using the website deck.toys, which was administered to 8 volunteer graduate students at a private Chilean university over a 3 week period. To examine motivation, cognitive factors, affective factors, behavioristic factors, and autonomy were drawn from expectancy-value theory, social-cognitive theory, attribution theory, self-determination theory, and behaviorism. Software tracking was used to monitor students' participation, while exit polls inquired on students' use of mobile devices. A post-intervention Likert scale was administered to analyze motivational factors, and semi structured interviews were conducted to provide greater richness and depth. The results indicate quest-based learning positively influenced asynchronous participation, with 7 of 8 students meeting or exceeding the participation requirement. The tool's engaging methodology, relevant content and context, and game objectives activated cognitive, affective, and behavioristic factors. Meanwhile, 2 participants used mobile devices to access the learning tool.

**KEYWORDS:** quest-based learning, gamification, motivation, asynchronous study, mobile-assisted language learning, computer-assisted language learning, b-learning

# Chapter I: Introduction

## **1.1 Background Information**

UdeC English Online is a b-learning EFL program that services graduate and undergraduate students from a variety of programs (or majors) at the University of Concepcion, a large private “traditional” Chilean university. Originally conceived of as an elective course to meet the growing needs of English proficiency for undergraduate students of non-English majors, the program has expanded and is now required coursework for over a dozen undergraduate programs at UdeC. It serves over 2,000 undergraduate and over 200 graduate students per semester, across 4 modules (1 module per semester). Upon completion of the first year (Modules 1 and 2), students should achieve an A2 level of English according to the Common European Framework of Reference for Languages (Council of Europe, 2018); and B1 at the end of the second year (Modules 3 and 4).

Udec English Online combines face-to-face communicative classes with independent study through a proprietary online learning platform that was developed in-house in the early to mid 2000s. However, since it’s first launch, the platform itself has only been modestly revised and updated. As such, it is outdated in terms of functionality, design, and layout. Consequently, many students have expressed dissatisfaction, frustration, or boredom with the platform. Furthermore, the platform is built on Flash, which is not accessible through mobile devices, and PC browser support was discontinued in December 2020. Currently, the platform is being hosted on a private server accessible via a custom-built web browser as a temporary measure, but it must be rewritten from the ground up. This presents an opportunity for a redesign, and the program is currently considering ways to improve the next iteration of the UdeC English Online platform to make it more engaging and motivating for students. This action research project aims to test the use of quest-based learning, a gamified or game-based methodology, in order to increase students’ motivation and participation in asynchronous study.

## **1.2 Problem Identification**

Since the start of the global pandemic caused by COVID-19, issues with both synchronous and asynchronous instruction have emerged. Unofficial surveys conducted by the teaching staff prior to the pandemic showed that students’ perceptions of face-to-face classes as mostly positive, while perceptions of the platform were more mixed.

Pre-pandemic, students had evaluated conversation classes as being productive, useful, and entertaining. However, starting in March of 2020, these classes have migrated to online video conference sessions on Microsoft Teams. This has presented a particular challenge for communicative language instruction. Teachers cannot utilize the same group interactions, social dynamics, and physical spaces that are present in face-to-face environments. Interactions are slower, and students have fewer opportunities for communication. Consequently, students can be less engaged and may face obstacles or distractions at home that don’t exist in a classroom. In this context, attendance is no longer required. As a result, many students have lost interest in online classes, and attendance has dropped precipitously a few weeks into each semester. This may be attributed to a lack of perceived value in conversation classes; embarrassment due to lack of preparation or circumstances at home; time or technology constraints; or no extrinsic incentive to attend class. By extension, lack of synchronous participation has led to worse learner outcomes compared to previous years.

Prior to the pandemic, students' perceptions of the online platform had been mixed. The teacher researcher has heard first-hand praise for certain elements of the platform including the thematic and narrative structure of each lesson; the congruence and contextualization of grammar, vocabulary, and linguistic functions; and the utility of some sections of the platform. However, students often complain that it is slow, glitchy, difficult to access, and boring. The platform itself is old, as it was first created in 2004 and hasn't undergone any significant changes to structure or content since its launch. Study habits, student expectations, and technology have evolved since the program's inception. Consequences, online learning is no longer novel or appealing in and of itself as it was in the early 2000s (Flores, 2015). As a result, few students use the platform to study regularly. Instead students refer to PowerPoint presentations created for conversation classes and alternative online resources, and in some cases do not study at all. The vast majority of current students are required to take English class as part of their curriculum and may not be intrinsically motivated to learn English. Finally, the platform was built on Flash, which is not accessible on mobile devices and constrains students' access to the platform and is no longer supported by web-browsers. As a temporary measure, the platform is currently being hosted on a private server accessible via a custom-built web-browser created by the programming team at the University. However, this is a temporary solution and the platform needs to be rebuilt from the ground up.

This presents a unique opportunity to reevaluate the current platform, the methodologies and technologies used in order to create a system that is more engaging, motivating, and accessible. This could result in increased participation and thus improve learner outcomes. Such improvements would address both the immediate challenges presented by inadequate synchronous instruction during the pandemic, as well as the longer term need to increase asynchronous use of the platform in general.

This action research project examines the use of mobile-accessible quest-based learning in order to increase students' access, motivation and participation in asynchronous study. Quest-based learning is a gamified methodology which is oriented around the completion skill-based tasks, called quests (Haskell, 2013). Learners can choose which quests to complete and in what order. This creates autonomy and fosters differentiated learning paths (Haskell, 2013). As players progress through quests, they gain the knowledge and skills necessary to complete the final task. Quest based learning uses game design elements such as points, badges, progress bars, and narratives. These provide immediate feedback, reward desired behavior and motivate players, while a meaningful story creates interest in the tasks (Sailer. et. Al., 2013). The relevant content, engaging methodology, and game elements activate cognitive, affective, and behavioristic motivational factors (Schunk, 2020; Eccles and Wigfield, 2020; Weiner, 2005; Chen, 2011). The student-centered nature of quest-based learning fosters feelings of autonomy (Ryan and Deci, 2000). Finally, mobile-accessible learning tools provide greater flexibility and reduce the barriers of entry caused by socio-economic factors (Bachore, 2015; Miangah, 2012).

### **1.3 Aims**

The aim of this action research project is to increase asynchronous participation and motivation through the use of mobile-accessible gamified quest-based learning.

General objective: To examine the effects of using mobile-accessible asynchronous quest-based learning on university students' motivation and participation.

Three specific objectives were outlined.

- To analyze the influence of asynchronous quest-based learning on participation
- To examine the motivational factors activated by the learning tool.
- To inquire on students' use of mobile devices to access the learning tool.

# Chapter II: Theoretical Framework

## 2.1 Blended Learning, Asynchronous Learning, and Participation

Blended learning, or b-learning, combines the use of online training and assessment with face-to-face classes in order to improve outcomes and reduce cost (Ginns, 2007). Face-to-face classes give learners the time and space to practice oral production. They can interact and negotiate meaning, create varied and creative language and receive immediate feedback from the teacher (Bañados, 2018). Students also make use of online learning tools to study and practice the target language at their own pace in their own time (Bañados, 2006). This creates a student-centered approach to teaching and learning. It provides more opportunities for exposure and exploration of the target content and reduces the time and location constraints of classroom instruction (Mohamed, 2019).

Independent study is a crucial element of b-learning and UdeC English Online, as face-to-face classes do not provide sufficient practice time to obtain language learning objectives (see Table 1).

UdeC English Online Curriculum	Language Proficiency Objective (CEFR)	Number of Guided Learning Hours (CEFR)	Number of Face-to-Face Guided Learning Hours (UdeC English Online)	Estimated Number of Asynchronous Learning Hours Required
Module 1	A1	90-100	30	<b>60-90</b>
Module 2	A2	+100-150	30	<b>70-120</b>
Modules 3-4	B1	+160-240	60	<b>100-190</b>

**Table 1: Learning goals and the number of guided learning hours.**

Table 1 shows Udec English Online's language proficiency objectives for the end of each module, along with CEFR estimates to obtain that level, assuming adult learners in a positive context (Council of Europe, 2018). Face-to-face hours were subtracted from these figures to calculate the estimated number of asynchronous guided learning hours. This illustrates the role asynchronous study plays in achieving learning goals at UdeC English Online (Bañados, 2006).

## 2.2 Quest-based Learning

Quest-based learning is a gamified or game-based instruction methodology which is oriented around the completion of tasks (Haskell, 2013). There are no prescriptive or definitive models of quest-based learning. Rather, it is more of a curriculum design principle based on student choice and scaffolding, leading to the attainment of learning goals (Snelson, 2021). Students select learning paths which guide them through progressively more challenging activities culminating in the completion of a competency-based task, or quest (Haskell, 2013). It incorporates game design components such as points, badges, and progress bars to engage and motivate learners. The curriculum is individualized and flexible, as students choose the order in which they complete these quests, and in so doing forge a unique learning path that works best for them (Haskell, 2013). This open and nonlinear architecture creates a more autonomous, and therefore more motivating learning environment (Haskell, 2013; Ryan and Deci, 2000). Quest-

based learning is designed around a narrative that engages students in the story and can contextualize the content, which can create a more immersive and engaging learner experience (Perry, 2014; Sailer, et. al, 2013).

Feedback in quest-based learning can vary from other forms of gamification. In all gamified learning environments, feedback should be instantaneous to maintain game flow and inform learners they are performing the task correctly (Flores, 2015; Perry, 2014). However, not all forms of feedback are appropriate in a quest-based environment. Namely, feedback should be personalized rather than comparative in order to recognize students' progress and success and avoid feelings of discouragement (Haskell, 2013). Badges and achievements are conducive elements to achieve this outcome, while leaderboards may not be. Haskell (2013) emphasizes the use of progress bars as a means of displaying students' advancement towards a "winning condition." For graded tasks, an assignment is either accepted or rejected; students then have the opportunity to correct and resubmit the assignment without penalty, which allows students to fail without lasting punishment (Haskell, 2013). This dynamic reduces students' anxiety and creates opportunities to provide relevant and , and provides opportunities for further risk taking, learning and exploring (Dickey, 2005). It also creates opportunities to provide relevant and meaningful feedback (Perry, 2014).

Quest-based learning can have positive effects on learners' motivation and participation in academic settings. Haskell (2013) found that students spent more time and completed more classwork than students in a traditional class. Students continued to play through the curriculum, even after they had completed the coursework required to receive an "A" (Haskell, 2013). Snelson's (2021) meta-analysis found that many other quest-based learning studies yielded similar results. Perry (2014) observed the same phenomenon, as students stayed 10 minutes past the end of class time to complete the task they were working on. Perry's (2014) students described her augmented-reality quest-based environment as "fun," "useful," "relevant" and "motivating." They enjoyed the contextualized nature of the quests, and the change of scenery that the experience offered.

### **2.3: Gamification and Game-based Learning**

Over the last 15 years, gamification and game-based learning have risen to prominence among researchers and practitioners in the fields of psychology, business, and education as a means of enhancing instruction and increasing engagement and motivation among participants. Gamification has become somewhat of a buzzword in business and education circles and is sometimes mischaracterized or used synonymously with game-based learning. However, game-based learning and gamification are distinct concepts. Game-based learning is the use of games for educational purposes, while gamification is the use of game-design elements in a non-game context (Flores, 2016; Sailer et. Al., 2013).

While there are many definitions of games, a common definition used among researchers was coined by Salen and Zimmerman (2004, p. 80): "a system in which players engage in an artificial conflict, defined by rules, that results in a quantifiable outcome." Games also incorporate an element of play, which are free and exploratory activities that allow for experimentation and learning (Sailer et. Al. 2017). When playing games, learners utilize personal strategies and develop the knowledge and skills to overcome these artificial conflicts against an antagonistic player or system (Sanchez,

2020). In digital games with progression, players must expand and improve upon these skills and strategies in order to complete increasingly challenging tasks (Plass, 2015). These games provide essentially a learning experience, where the mechanics and abilities needed to win are taught iteratively through scaffolding (Pass, 2015).

Gamification, on the other hand, is the use of game-design elements in non-game contexts to motivate participants and incentivize desired behaviors (Wood and Reiners, 2015). Components such as points, badges, progression and leaderboards are used to reward participants for desired behaviors in real-world situations (Sailer et. Al. 2017). Students strive to earn these virtual rewards, and in so doing, are motivated to engage in activities they otherwise wouldn't find as attractive (Plass, 2015). Flores (2016) succinctly distinguishes the two as such: the primary purpose of game-based learning is to learn by doing, while the purpose of gamification is to motivate learners. The following examples illustrate these two concepts.

Playing the classic pen-and-paper game Hangman to practice spelling and review vocabulary. One player selects a word then draws a gallows and the corresponding number of underline spaces for each letter in the word (apple = \_ \_ \_ \_ \_). The other player(s) attempt to spell the word by guessing individual letters. When players guess a letter that appears in the word, the first player writes all instances of that letter within the word. For every letter the players guess incorrectly, a body part is drawn on the gallows. Students must finish the word puzzle before the stick figure drawing has been completed (head, body, arms, and legs). Students utilize their existing knowledge and deductive reasoning to strategically guess the letters in order to complete the puzzle, and in so doing reinforce their spelling and vocabulary knowledge.

As students play Hangman, the teacher circulates and observes students' participation within the class and gives everyone who is engaging in the activity a positive mark on the class list. This is integrated into a larger, ongoing reward system. Students are aware of both the reward system and the teacher's intention when circulating the class and are thus motivated to participate in order to obtain the participation reward.

The former example is game-based learning, while the latter is gamification. There are a few assumptions and implications that can be highlighted from these examples. First of all, gamification requires a long-term, ongoing system, while learning games can be used selectively and when appropriate. Secondly, game-based learning integrates the target content or skills into game mechanics (in this case, attempting to identify and spell target vocabulary), while gamification does not (Findlay, 2016). In a gamified system, participants are not concerned about the rules and guidelines to achieve an objective or overcome an obstacle like they are in a true game (Wood and Reiners, 2015). Both game-based learning and gamification require careful planning and design. However, with game-based learning, the primary concern is how the gameplay and mechanics reinforce target skills and produce learner outcomes (Sanchez, 2020). In gamification, the concern is how the game-design elements and components affect students' motivation (Toda et. Al, 2019).

There are some ambiguities which emerge from these definitions as they pertain to quest-based learning. The inclusion of game objectives and an end goal within a narrative create more of a game-like experience for learners, as they engage in the activities in order to complete in-game objectives. The scaffolded design architecture of quest-based learning aims to develop skills iteratively, culminating in the completion of tasks, which shares the same teaching dynamic as games (Plass, 2015; Dickey, 2005). On the other hand, the skills being developed aren't necessarily integrated into the game mechanics (Findlay, 2016). This calls into question whether quest-based learning activities are considered artificial conflicts (completing the game) or real-world activities (completing assignments for academic purposes) (Sanchez, 2020; Sailer et. Al, 2017). While an argument can be made for either, the gamification elements and pedagogical instruction are both integral to quest-based learning. This means that designers should take into account the game components used and the activity/game-design decisions to create positive learner experiences and outcomes.

### 2.3.2 Gamification

Gamification is ubiquitous in the modern world, most noticeably in the consumer-facing technology landscape. Social media websites use mechanisms such as likes upvotes, shares, and retweets as a quasi-point system which provide behavioristic rewards and cognitive validation for users. Mobile apps use gamification mechanisms like accumulative daily check-in rewards and roulette wheel spins to increase contact instances with users. These examples illustrate what gamification is, but they don't convey the complexity or potential utility of gamified systems.

Frequently in academic or professional settings, individuals encounter tasks they perceive to be boring, tedious, or unimportant. Incorporating a game-like dynamic through the use of feedback, progression, and rewards can make these activities more interesting, more rewarding, and more stimulating (Sailer et. Al, 2013). When designed well, these systems can create a sense of autonomy, achievement, and interest within users as they work to complete the various tasks, resulting in a more enjoyable and engaging experience which motivates learners to continue working and improving (Kitsantas, 2020).

There is no comprehensive and singular definition of gamification, nor is there an exhaustive list of gamification elements or their implementations (Flores, 2015; Sailer et. Al., 2013, Wood and Reiners, 2015). Some of the most common and frequently cited elements are points, progress bars, badges, leaderboards, avatars, profile development, levels, quests, and virtual goods. (Flores, 2015; Wood and Reiners, 2015, Sailer et. Al, 2013) (see Table 2).

<b>Design Component</b>	<b>Definition</b>
Points	A numerical mark or unit of scoring awarded for success or performance.
Badges	Visual representations of achievements obtained
Leaderboard	Publicly shown representation of student ranks.
Progression / progress bars	Displays players' status in relation to objectives.
Quests	A series of tasks players fulfill within the game.
Levels	Separate sections or parts of the game.

Avatars	An icon or figure representing a particular person in a video game or digital realm.
Profile development	Any gamification mechanism which displays or incorporates personalized growth or achievements.
Social Elements	Relationships and interactions between players within the game.
Stochastic Elements	Elements that present degree of randomness or chance within the game, i.e. dice rolls, roulette wheel spins, loot boxes, etc.
Virtual goods	Items that can be obtained within the game, which may present utility value or aesthetic value.
Narratives	Storylines or characters featured within the game

**Table 2: Game-design components and their definitions.**

These design elements can serve different mechanical purposes depending on their functionality and role within the gamified system (Wood and Reiners, 2015). For example, points may function as currency to buy virtual goods or as a score to display leaderboards. Depending on design and functionality of the system, gamification can motivate and engage learners in different ways.

### 2.3.3 Game-design Components and Motivation

The primary purpose of gamification is to motivate learners (Flores, 2016). As such, understanding how different components influence motivation is helpful for creating or analyzing a gamified system. Sailer, Hense, Mandl, and Klevers (2013, p. 32-33) hypothesized several motivational perspectives associated with gamification, and components associated with each of these perspectives (see Table 3).

Motivational perspective	Motivational Mechanism	Game component
Trait perspective	<p>a) Players with a strong achievement motive are likely to be motivated if gamification emphasizes achievement, success and progress.</p> <p>b) Players with a strong power motive are likely to be motivated if gamification emphasizes status, control and competition.</p> <p>c) Players with a strong affiliation motive are likely to be motivated if gamification emphasizes membership.</p>	<p>-<i>Badges</i> fulfill needs for success, can work as virtual status symbols, thus addressing learners with a strong power motive. They can also function as a group identifier and satisfy address learners with a strong affiliation motive.</p> <p>-<i>Leaderboards</i> foster competition and address learners with a strong achievement and power motive.</p>
Behavioristic learning perspective	a) "Players are likely to be motivated if gamification provides immediate feedback in form of positive and negative reinforcement."	- <i>Points</i> provide immediate feedback and reward learners for strong performance.

	b) "Players are likely to be motivated if gamification offers rewards."	-Badges reward learners for their behavior.
Cognitive perspective	<p>a) "Players are likely to be motivated if gamification provides a clear and achievable goal."</p> <p>b) "Players are likely to be motivated if gamification highlights the resulting consequences of a goal."</p> <p>c) "Players are likely to be motivated if gamification emphasizes the importance of a persons' action within a given situation."</p> <p>d) "Players are likely to be motivated if gamification fosters mastery orientation regarding goals."</p>	<p>-Badges provide clear goals.</p> <p>-Quests provide clear goals, highlight the consequences of a goal, and emphasize the plays' actions within a given situation.</p>
Self-determination perspective	<p>a) "Players are likely to be motivated if they experience the feeling of competence."</p> <p>b) "Players are likely to be motivated if they experience the feeling of autonomy."</p> <p>c) "Players are likely to be motivated if they experience the feeling of social relatedness."</p>	<p>-Badges satisfy feelings of competence.</p> <p>-Leaderboards can foster feelings of competence for top performing individuals, and social relatedness when in teams.</p> <p>-Narratives where learners can control the outcome can foster feelings of autonomy.</p> <p>-Avatars with customizable abilities can foster to feelings of autonomy.</p>
Perspective of interest	<p>a) "Players are likely to be motivated if gamification meets the players' interests and sparks interest for the situational context."</p> <p>b) "Players are likely to be motivated if gamification enhances the feeling of flow by providing direct feedback."</p> <p>c) "Players are likely to be motivated if gamification enhances the feeling of flow by providing a clear goal."</p> <p>d) "Players are likely to be motivated if gamification enables the feeling of flow by adapting the level of difficulty to ones' individual skills and competences."</p>	<p>-Points provide direct feedback.</p> <p>-Badges provide clear goals.</p> <p>-Quests provide clear goals.</p> <p>-Narratives can spark interest in the learners.</p>

Perspective of emotion	a) "Players are likely to be motivated if gamification decreases negative feelings like fear, envy, and anger." b) "Players are likely to be motivated if gamification increases positive feelings like sympathy and pleasure."	-Narratives can foster positive emotions. -Avatars that grow and develop with the learner can foster positive emotions.
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**Table 3: Motivational perspectives, game characteristics, and gamification elements.**

It is impossible to describe gamification exhaustively in a single article, as such not all components mentioned in Table 2 are addressed by Sailer et. Al. (2013). As this table illustrates, gamification can address multiple motivational perspectives simultaneously, and game components may have different motivational traits depending on their specific function. By combining elements that are relevant and meaningful to learners, gamification can make otherwise mundane or tedious tasks more engaging, rewarding and motivation. However, creating an effective gamified system is more than simply adding a point system or creating badges; it requires careful thought, planning, and reflection (Huan and Soman, 2013).

### 2.3.4 Designing and Implementing Gamified Systems

Implementing a successful gamified system requires careful planning and consideration. It is insufficient to simply add these elements to existing activities, as these can have unexpected and undesirable impacts on learners' behavior or affective state (Wood and Reiners, 2015). Teachers and designers should consider their target audience, the learning objectives, the experience they want to create, and select the appropriate game components in order to create a cohesive and engaging gamified learning experience (Flores, 2015, p. 44; Huan and Soman, 2013) (see Figure 1).



**Figure 1: Educational gamification five step model.**

In this study, quest-based learning was first selected as an appropriate architecture for EFL university students. To that end, the website deck.toys was selected, as it was deemed sufficiently capable to create a quest-based learning platform. The gamification elements included were based on the tools available on deck.toys and what was appropriate for quest-based learning. These were points, progression, treasure keys, quests, and a narrative (see Table 4).

Component	Functionality	Motivational Factor
Points	Points were awarded upon successful completion of an activity on the first attempt.	-Feedback

Progression	Progression was shown through advancement on the map as students completed the activity on each space towards the end goal.	-Feedback -Goals
Treasure keys / Learning Paths	Treasure keys were awarded at the end of each learning path (3 per quest). The first 2 treasure keys were needed to gain access to the final learning path and complete the quest. The end-of-quest treasure key was used to unlock the door in the meta-quest.	-Rewards -Goals -Achievement -Autonomy
Quests	Quests were the primary means by which students interacted within the game. Each quest presented target vocabulary and grammar/functions, culminating in the completion of a communicative task. The game consisted of 4 quests, and one meta-quest.	-Rewards -Goals -Interest -Achievement -Autonomy
Narrative/Context	The premise “The Simpsons are going to Itchy and Scratchy Land... tomorrow. Help them get through Friday” was used to provide a quasi-narrative. “The Simpsons” characters were used to provide context to both the objective and the learning materials.	-Emotion -Interest

**Table 4: Game design elements utilized and the corresponding motivational factors.**

## 2.4 Motivation

Motivation is a crucial element to second language learning, and a key factor that influences students’ L2 learning success (Gardner, 2007; Oroujlou, 2011). While there are many interpretations and definitions of the term “motivation”, this study conceptualizes “motivation” as choices; the activities one chooses to initiate and persist in, an avoid and/or quit, and the underlying factors that influence those choices. To this end, 8 factors from 4 different motivational perspectives were identified. Understanding these factors, the mechanisms behind them, and strategizing the learning experience to foster motivation are essential to promote student engagement and participation, in order to produce better learner outcomes.

### 2.4.1 Theories of Motivation

There are various constructs used to describe motivation, which are too numerous to include in a single list (Gardner, 2007). The most commonly used by researchers in EFL contexts are intrinsic vs. extrinsic motivation, and instrumental vs. integrative

motivation (Orouljou, 2011; Gardner, 2007). However, the teacher researcher didn't find these constructs particularly useful for this study, as it was focused on participation and engagement in one specific task, rather than language learning itself. Instead, the study explores motivation in terms of cognitive, affective and behaviorist factors, and autonomy, and were constructed using the various achievement theories of motivation: expectancy-value theory, social-cognitive theory, self-determination theory, and attribution theory, as well as behaviorism.

#### **2.4.1.1 Expectancy-value Theory**

According to expectancy-value theory, engaging with and persisting in an activity is contingent on two primary factors: expected outcomes and subjective task values (Wigfield and Eccles, 2000). Expected outcomes refer to the participant's anticipated performance in a task. Individuals are more likely to engage with and persist in activities when they expect to succeed and less likely to participate when they expect to fail. These are influenced by self-perceptions of competency and the perceived task difficulty (Wigfield and Eccles, 2000).

Furthermore, task values are subjective; not all activities carry equal importance or value for all individuals (Eccles and Wigfield, 2020). Task values include intrinsic interest in an activity, the attainment value, and the utility value of engaging in an activity (Wigfield and Eccles, 2000). Intrinsic interest is personal enjoyment or pleasure one experiences when engaging in an activity directly, i.e. listening to music or watching movies (Vanslambrouck, et. al, 2018). Attainment value relates to activities and behavior that satisfy one's social identity and self-image (Wigfield and Eccles, 2000). For example, tabletop games like Dungeons and Dragons may be appealing or repulsive based on one's personal attitudes about "nerd culture." Utility value is the perceived usefulness of participating in an activity, particularly if the individual believes it will serve one's future goals (Vanslambrouck, et. al, 2018). For example, completing ungraded practice worksheets if one believes it will help them perform better on an exam. These task values are weighed against the expected costs of participation (Eccles and Wigfield, 2020). This includes the effort cost, the amount of effort one expects is required to participate in a task; the emotional cost, the psychological toll of engaging in an activity, particularly in failure states; and the opportunity cost, or the time commitment that could otherwise be spent on something else (Eccles and Wigfield, 2020). Vanslambrouck (2018) also considered technology cost: obstacles or hindrances to participation created by the use of technology in a b-learning environment. Student engagement and persistence in activities is greater when perceived task values are high, and when the perceived costs are low (Eccles and Wigfield, 2020).

#### **2.4.1.2 Social-cognitive Theory**

Social-cognitive theory describes a learning model based on social observation and cognition (Bandura, 1986). The implication for motivation is a multifaceted model deriving from task-interest, self-efficacy, goals, social comparisons, and self-regulation (Schunk, 2012). Task interest is similar to task values described in expectancy-value theory (Martin and Dowson, 2009). Self-efficacy is a student's perceptions of their skills and abilities when engaging in an activity. When students feel efficacious, they are more likely to continue participating in activities that are beneficial to their growth and development,

which creates positive outcomes (Schunk, 2020). Experiencing success while engaging in an activity isn't sufficient to foster feelings of self-efficacy, however. Rather, activities must present some level of challenge or difficulty while still being within one's capabilities (Bandura, 1986). Feelings of self-efficacy is unstable and can change abruptly if a task becomes too difficult. As such, student progress and task difficulty should be monitored and evaluated frequently (Schunk, 2012). Self-regulation describes the habits, attitudes and strategies a student implements to achieve their desired learning outcomes (Schunk, 2020). This includes study/learning strategies that a student employs, personal goal setting, and the self-discipline and self-motivation one exercises in a learning situation (Bandura, 1986).

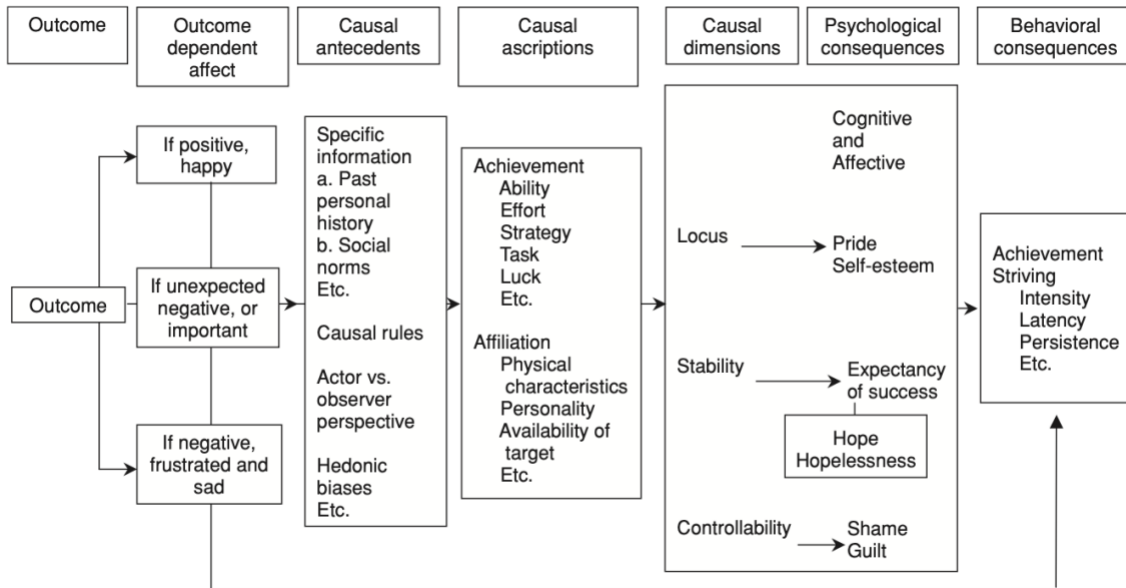
Goals are "mental representations of what one is attempting to obtain" (Schunk, 2020, p.2). These can manifest as either mastery goals or performance goals (Da Fonseca and Moller, 2006). Mastery goals are the skills and abilities one expects to develop, while performance goals are the accomplishments one expects to achieve, or one's performance compared to others (Da Fonseca and Moller, 2006). Whether goals are motivation depends on their clarity, proximity, and relevance to students, as well as the challenge they present (Schunk, 2020). Students are more likely to strive to attain objectives that are clear and cohesive, rather than those that are imprecise or ambiguous (Zimmerman, 2015). For example, a speaking task like "work with a partner and talk about your family" is not as clear and specific as "work with a partner, ask them questions and draw their family tree. Include 15 family members." Goals that are more proximate are more highly motivating than those that are further away (Bandura, 1986). For example, someone is more likely to study tonight if they have a quiz tomorrow. Likewise, an activity is more motivating when the objectives presented are personally meaningful and relevant to students (Schunk, 2020). This can be due to one's intrinsic interest or the perceived utility value of achieving a goal. For example, writing a thesis paper for fun vs. writing a thesis paper in pursuit of a degree. Finally, goals that present a level of challenge are more motivating than goals that are easy to achieve (Bandura, 1986). Students are less likely to strive for goals that are perceived to be too easy or too difficult (Schunk, 2020).

#### **2.4.1.3 Attribution Theory**

Attribution theory addresses how individuals interpret outcomes and how this interpretation influences one's affective state and, by extension, future behaviors. After experiencing a state of failure or success, the individual attributes the result to specific causes (Weiner, 2005). These causes fall into 3 property categories: locus, stability, and controllability (Weiner, 2005). Locus, or location, refers to causes that are internal or external to the individual (Weiner, 2010). Internal causes are generally related to personal ability or effort. Stability applies to whether a state of failure is changeable, if the same outcome will be expected after repeated attempts (Weiner, 2005). For example, if a student fails a test because they didn't study, they may believe that the outcome could be improved in the future. Finally, controllability is whether the individual had control over the outcome, such as effort or lack thereof, or if it can be attributed to factors beyond their control, such as bad luck or faulty design (Weiner, 2005).

These attributions create affective and cognitive reactions within the individual, such as feelings of pride and self-esteem following success, or shame, guilt, and

hopelessness in failure states (Weiner, 2010) These in turn influence future behavioral choices, such as persistence or dropping out (see Figure 2; Weiner, 2010, p. 34).



**Figure 2: Attribution theory of intrapersonal motivation.**

Similar to expectancy value theory, activities are selected based on the anticipated likelihood and consequences of an outcome. However, Atkinson (1957) attributes this task selection to affective motives. Succeeding in a task brings with it a sense of achievement, the feeling of pride of accomplishment and competency one experiences after completing a task or obtaining a goal (Atkinson, 1957; Weiner, 2010). Failure, on the other hand, brings with it feelings of shame, frustration, or incompetency (Weiner, 2014). Students engage in activities that they believe will produce positive affective outcomes, and avoid those that produce negative ones (Weiner, 2014). Feelings of competency is both a positive affect and a predictor of future outcomes and is strongest when tasks are attributed to causes that are internal, unstable, and controllable (Weiner, 2005). Thus, students are more likely to participate when they feel they are going to succeed.

#### 2.4.1.5 Self-determination Theory

Self-determination theory defines motivation as individuals choosing behaviors that satisfy one's physiological and psychological needs (Deci and Ryan, 2012). One exercises self-determination by consciously evaluating and selecting behaviors that they expect will satisfy either extrinsic or intrinsic motivational factors (Deci and Ryan, 2012). In this theory, intrinsic motivation is limited to personal enjoyment of an action and affect from the result, as well as fulfilling an intrinsic need for self-determination, competence, and social relatedness (Ryan and Deci, 2000). Anything external, such as rewards, money, recognition, grades, or promotion, are defined as extrinsic motivational factors (Deci and Ryan, 2012). Activities and situations that satisfy the need for competence, autonomy and social relatedness are intrinsically motivating in and of themselves, and students experience higher levels of motivation in environments where they can feel efficacious and control their own actions (Deci and Ryan, 2012). This, in turn, influences personal choices when fulfilling extrinsic needs. How to study for an exam, one's chosen

profession, and where one decides to live all exemplify use of self-determination to meet one's needs. As a result, students are more likely to engage with learning materials which allow for autonomy and foster feelings of competency (Sailer et. Al., 2017).

#### **2.4.1.6 Behaviorism**

Of all the motivational theories mentioned in this study, behaviorism and operant conditioning are the most immediately associated with gamification. Behaviorism holds that behaviors are learned and shaped through interactions with the environment in a process called operant conditioning (Skinner, 1963). In this model, the user, or operant, responds to environmental stimuli, which is accompanied by either a positive or negative consequences. The operant then associates the consequence with the behavior, which determines whether the behavior will be repeated or avoided (McLeod, 2012). Behaviors that have a pleasant or positive outcomes are more likely to be repeated, while behaviors that have negative outcomes are suppressed (Chen, 2011). Since operant conditioning was first conceived, advancements in neuroscience have revealed the role of the dopamine, a neurotransmitter within the brain, which is activated when an organism experiences a reward. Rewards can take many forms; they can be sensory, situational, novel and surprising, and perceptively valuable, among others

Administering rewards need not be immediate or consistent to create learning; behaviors can be reinforced or punished on varying intervals and the number of responses (McLeod, 2018). Use of these different reinforcement schedules resulted in learning with different effects. In continuous reinforcement schedule, stimuli are administered immediately following the response; e.g. flipping a switch results in the light turning on or off. As a result, behavior is learned quickly (Lim, 2020). Ratio schedules are based on the number of responses; these can fixed, meaning predetermined and unchanging, or variable, random and unpredictable (Lim, 2020). For example, a casino that credits your rewards card \$1 every hour you play follows a fixed ratio schedule, while the slot machine reinforces spins with occasional wins on a variable ratio schedule. Interval schedules are based on the time lapse between the behavior and the reinforcement, which can also be fixed or variable (McLeod, 2017). There is no distinction between feedback and rewards in operant conditioning. In this study, the distinction derives from different reinforcement schedules.

#### **2.4.2 Motivational Constructs and Factors**

This study examines 8 motivational factors from 4 perspectives, drawn from the aforementioned theories of motivation. Cognitive factors refer to the internal means-end analysis one conducts when deciding whether to engage in an activity (Sailer et. al, 2013). These were defined as *interest* and *goals*. *Autonomy* is the perceived feeling of self-determination while engaging in an activity and is in its own category (Ryan and Deci, 2000). Affective factors refer to the feelings and emotions one experience while engaging in an activity (Sailer et. Al. 2013). These were *feelings of competency*, *achievement*, and *emotions*. Finally, behavioristic factors refer to influencing student behavior through operant conditioning (stimulus-response-consequences) (Roessger, 2012). Points, progression, treasure keys, and completing the game were defined as *immediate feedback* and *rewards*.

### 2.4.2.1 Cognitive Factors

Cognitive factors examine motivation as an internal means-end analysis one uses when determining whether to engage in and/or persist in a behavior (Sailer et. Al, 2013). This analysis is based on perceived benefits one expects to receive compared to the cost of participating. This construct was chosen as a means of exploring the perceived value of the learning tool: whether students felt it was interesting, useful, and worth their time, and whether it presented objectives that were relevant, meaningful and achievable. As such, these motivational factors were defined as *interest* and *goals*.

*Interest* derives primarily from task values of expectancy value theory (Wigfield and Eccles, 2000). It focuses on students' perceptions of the game as a study tool, as opposed to interest in the game itself or interest in language learning in general. Interest encompasses perceived values and costs (Eccles and Wigfield, 2020; Vanslambrouck et. Al, 2018). *Interest* includes the relevancy of the content, both the target language and the activities used for instruction; the context, use of "The Simpsons" to generate interest and create the narrative structure; and its utility value, its effectiveness in improving their English skills, especially compared to other means of study. Interest also includes whether the learning tool could foster greater interest of English learning in general. According to expectancy-value theory, higher task interest is associated with higher levels of motivation (Wigfield and Eccles, 2020). Interest is counterbalanced by cost, namely the opportunity cost of engaging in this activity compared to other activities or alternative methods for studying; the *effort cost*, the amount of effort students expected to require; and the emotional cost, avoidance of anticipated negative affective outcomes, which is also categorized as an affective factor (Eccles and Wigfield, 2020).

*Goals* derive from social-cognitive theory and attribution theory. *Goals* are "mental representations of what one is attempting to obtain" (Schunk, 2020, p. 2). This can be either a mastery goal, developing a skill or reaching a milestone, or a performative goal, getting a good grade or outperforming others (Lenz et. al. 2018). To this end, *goals* are what the student expects to gain from the learning tool: improving one's grades and improving one's English skills. According to social-cognitive theory, goals are more motivating if they are perceived to be clear, relevant, proximate, challenging, and achievable (Schunk, 2020). These traits apply to the learning objectives presented by the tool, i.e. completing individual activities, completing the separate learning paths, and finally, completing communicative tasks, and the in-game objectives; earning treasure keys, completing quests, and completing the game.

### 2.4.2.2 Autonomy

*Autonomy* is derived from Ryan and Deci's (2000) Self-Determination Theory, which holds that humans are intrinsically motivated to satisfy three intrinsic needs: the need for competence, autonomy, and social relatedness. Activities that allow for personal choice and self-determination are more intrinsically motivating and appealing (Deci and Ryan, 2012). This is also in-line with agency in social-cognitive theory: individuals strive for the ability to control their actions within a given situation (Schunk, 2020). *Autonomy* includes self-determination at the granular level, by giving students the freedom during activities to manage their own learning, and at the architectural level, by selecting quests and learning paths in the order they choose. Fostering learner autonomy is a cornerstone

of quest-based learning, and it heavily informed the conceptualization, planning and development process of the learning tool (Haskell, 2013).

#### **2.4.2.3 Affective Factors**

Affective factors refer to the feelings and emotions one experiences when engaging in an activity. Students seek to maximize positive affective states, while minimizing negative affective states (Weiner, 2014). This construct was chosen as a means of exploring the feelings and emotions that the student experiences during the game, whether their experience was enjoyable and fostered feelings of competency and a sense of achievement. These factors were defined as *feelings of competency, achievement, and emotions*.

*Feelings of competency* refer to how an individual feels about their skills and abilities while performing a task. It is an essential component in the achievement theories mentioned in the previous section, as it is both motivating in itself and strongly influences future behavior. Self-determination theory and social-cognitive theory both categorize feelings of competency as an intrinsic need (Deci and Ryan, 2012; Bandura, 1986), while attribution theory considers it a positive affect individuals attempt to maximize (Weiner, 2005). Competence is fostered by successfully completing perceptively challenging tasks, while it is hindered by failure (Schunk, 2012). Self-efficacy and motivation are maximized when task difficulty is high enough to be challenging without being insurmountable (Bandura, 1986). Therefore, tasks should present enough of a challenge to be effortful for students, while also being relatively achievable for the skill levels in the target group. According to attribution theory, students experience competency when they attribute success to causes that are: internal, within the individual; instable, uncertain or changeable; and controllable, within the learner's control (Weiner, 2004). In a game-like system, this means success or progression should require effort or skill (rather than automatic advancement). The system should be sufficiently challenging to present some uncertainty, and it should be free from platform errors or glitches that inhibit advancement. According to social-cognitive theory, perceived competency is highly beneficial for long-term learner outcomes, as it fosters continued participation in activities which contribute to learning and skills development (Schunk, 2020). It also directly influences outcome expectations and therefore the likelihood of engagement and persistence in an activity according to expectancy-value theory and attribution theory (Wigfield and Eccles, 2000; Weiner, 2005).

*Achievement* is the feeling of pride of accomplishment after one experiences success or attains an objective (Weiner, 2014). According to attribution theory, when students attribute their success to internal factors, such as skill or effort, they experience greater feelings of achievement (Martin and Dowson, 2009). The intensity of this affect is correlated with task difficulty, where accomplishments that are perceived to be difficult foster greater feelings of achievement (Lenz et. al., 2018). On the other hand, failure at a task fosters feelings of shame, frustration or incompetence (Weiner, 2014; Atkinson, 1957). As students seek to maximize positive outcomes and minimize negative ones, the perceived likelihood of success or failure strongly influences task selection (Weiner, 2010), particularly in a b-learning context where asynchronous participation is completely voluntary and there are a number of alternative resources available. The study attempts to foster feelings of achievement and reduce the probability of failure through scaffolding.

By creating incrementally slightly more difficult tasks, it reduces both the likelihood and cost of failure at any given stage, and upon completion of the quest and communicative task, students hopefully reflect on their progression and are left with a feeling of pride.

Finally, the *emotions* a student experiences while engaging in an activity can influence one's continued participation (Sailer, et. al, 2015). Students are more likely to engage in tasks provoke positive emotions, such as enjoyment and pleasure, while avoiding tasks that provoke negative emotions, such as boredom, frustration, and anxiety (Sailer et. Al. 2013). The use of an interesting and meaningful context and engaging activities can be used to increase pleasure and decrease boredom. Anxiety can be reduced by conscientiously structuring the content to not overwhelm students, and frustration can be reduced by ensuring the activities are clear, intuitive and free of programming errors.

#### **2.4.2.4 Behavioristic Factors**

Behavioristic factors derive from Skinner's (1963) operant conditioning, which works through a three-part contingency: stimulus-response-consequences, where consequences of a behavior determine its future likelihood of persisting (Roesger, 2012). Actors repeat behaviors which result in a perceived positive outcome and refrain from those that result in a negative outcome (Chen, 2011). By manipulating environmental factors, which in this case referred to the game design elements, one can shape behavior by incentivizing desired behaviors and discourage undesirable ones. These were defined as *feedback* and *rewards*. Feedback and rewards aren't distinct concepts in operant conditioning; rather, in this study, they correspond to different reinforcement schedules (Schultz, 2015; McLeod, 2017).

*Immediate feedback* is provided on a continuous intervention schedule. Every time a student performs a desired behavior, in this case completing the activity, the reinforcement is provided (Lim, 2021). This reinforcement schedule corresponds to the fastest adoption of a desired behavior, as the organism can immediately associate the behavior with the positive outcome (McLeod, 2018). In this learning tool, immediate feedback through the use of points and advancement informs the user that they are playing the game correctly. In this case, students immediately associate successfully completing an activity with a positive outcome, getting points and/or advancing on a map, which incentivizes further participation.

*Rewards* are administered on a fixed-ratio intervention schedule, where students received reinforcement after a pre-determined number of responses (Lim, 2020). While adoption of behavior is slower than continuous reinforcement on its own, this has the added benefit of greater persistent behavior, and compliments immediate feedback by providing longer term consequences for desired behavior (Chen, 2011; McLeod, 2018). In game systems, fixed ratio reinforcement schedules provide transparent objectives that the player can consciously work towards; for example, accumulating XP in a role-playing game to level up a character. In this context, rewards are treasure keys administered at the end of learning paths and at the end of quests. Treasure keys awarded at the end of learning paths were needed to unlock the final task to complete the quest, and treasure keys awarded at the end of each quest were needed to finish the game.

## **2.5 Mobile-Assisted Language Learning**

Mobile-assisted language learning, or MALL, is the use of mobile devices to learn a second language. In this study, mobile accessibility is explored as a means to improve flexibility and to reduce the barriers of entry for asynchronous study.

In Chile, mobile devices have surpassed laptops and computers as the primary means by which people connect to the internet, accounting for 57.8% of all web traffic (in terms of amount of data) in 2020 (Branch, 2021). Furthermore, 98.8% of social media users access their social media using a mobile device (cell phone or tablet), with 77.2% exclusively using a mobile device (Branch, 2021). Additionally, mobile phones offer other advantages over laptops and computers. The small form factor and 4G data plans offer greater portability and connectivity compared to other devices (Bachore, 2015). As people generally carry their phones at all times, mobile-accessible platforms allow students to access learning materials outside the home without the need for prior planning.

The University of Concepcion services students from virtually all Chilean socio-economic backgrounds. The majority of Chileans see higher education as a means of social mobility and a path to a greater income, higher standard of living, and a better quality of life. As such, the Chilean government provides many need-based scholarships and grants to low income undergraduate students (Pumari, 2015). As a result, the University of Concepcion admits many students from lower socio-economic backgrounds who may not have the same access to technology as their more affluent classmates. Perhaps they share a computer with their family members, or it may be unreliable and obsolete. Smartphone ownership, on the other hand, is more ubiquitous, with Chile having more mobile devices than people (Branch, 2021). Making the platform mobile-accessible, therefore, could reduce the barriers of entry for those students who otherwise wouldn't access the platform (Mianga, 2012). This study explores whether students take advantage of the learning tool's mobile-accessibility out of convenience or necessity.

# Chapter III: Methods

### **3.1 Type of Research**

This research project aims to improve pedagogical practices through action, observation, and reflection (Clark, 2020). Students take an active role in both their voluntary participation, and the qualitative feedback they provide in order to produce knowledge that is relevant and actionable (Clark, 2020). It conforms most closely to O’Leary’s (2004) model for action research, which follows an observation, research, planning, action, and observation cycle (Clark, 2020). This is a qualitative study, as it lacks the sample size, specificity, and rigorousness to be quantitatively valid, and the results are not intended to be extrapolated to the broader population. In fact, gamification is so customizable and diverse that teachers should carefully select the components to include in order to achieve the desired outcome, based on their students, their specific context and the tools available (Flores, 2015). The objective, therefore, was to probe this specific implementation of quest-based learning and its included components in order to analyze its influence on student participation and motivation, examine students’ mobile device use for asynchronous study, and to provide more detailed insight into students’ experiences, perceptions, and circumstances that aren’t reflected in quantitative analysis (Patton, 2014).

### **3.2 Research Problem**

The UdeC English Online program utilizes a B-learning methodology which combines face-to-face classes with independent study through the use of a proprietary online platform. The platform itself was developed in the mid-2000s and has only been modestly revised and updated since its launch. As such, it is outdated in terms of functionality, design, and navigation, and many students have expressed dissatisfaction or frustration. While this problem was understood prior to 2020, it has been exacerbated by the COVID pandemic, in which conversation classes have migrated to online video conferences. These classes have suffered from low attendance, limited participation, and fewer opportunities for student-to-student interaction. This has further highlighted the importance of engaging and accessible asynchronous learning tools for b-learning programs. Furthermore, the platform was built on Flash, which is no longer supported by any web browser, and is being hosted on a private server accessible by a custom-built web browser as a temporary measure, but the platform must be rewritten from the ground up. This presents a unique opportunity to rethink the content, architecture and methodology, and the program is currently considering ways to improve the next iteration of the UdeC English Online platform. The primary purpose of this study is to examine the influence of mobile-accessible quest-based learning on students’ motivation and participation in online asynchronous study with the hope that the findings can be considered in the development of the new proprietary platform.

### **3.3 Research Question**

To what extent does the use of asynchronous quest-based learning on a mobile accessible platform influence EFL graduate students’ motivation and participation?

### **3.4 Research Objectives**

#### **3.4.1 General Objective:**

To examine the effects of using mobile-accessible asynchronous quest-based learning on graduate university students' motivation and participation.

#### **3.4.2 Specific Objectives (SO)**

SO1: To analyze the influence of asynchronous quest-based learning on participation.

SO2: To examine the motivational factors activated by the learning tool.

SO3: To inquire on students' use of mobile devices to access the learning tool.

### **3.5 Research Participants**

The sample consisted of 8 graduate students at a Chilean university. All participants were volunteers recruited from a pool of approximately 80 students currently enrolled in Module 1 (1<sup>st</sup> semester) of a communicative English program. All participants are native Spanish speakers from Latin America, between the ages of 23 and 52 years old with an A1 level of English according to the CEFR. This is a convenience based sampling, as the researcher is a teacher within this program and has access to the student pool. No performance or demographic criteria were used in the sampling methodology, only their enrollment in Module 1 and their willingness to participate in a research project (Taherdoost, 2016). Participation in this study was restricted to Module 1 graduate students due to the content-specific nature of the tool (Module 1, Lesson 4: Daily Activities) and the semester schedule, as it coincided with the intervention period. The study was originally intended to be carried out with undergraduate students as they are the primary target demographic for the future online platform. However, the learning tool and research instruments weren't finalized in time, and the study was subsequently postponed 3 weeks and carried out with the postgrad course, which had a later start date.

### **3.6 Stages of the Action Research Project**

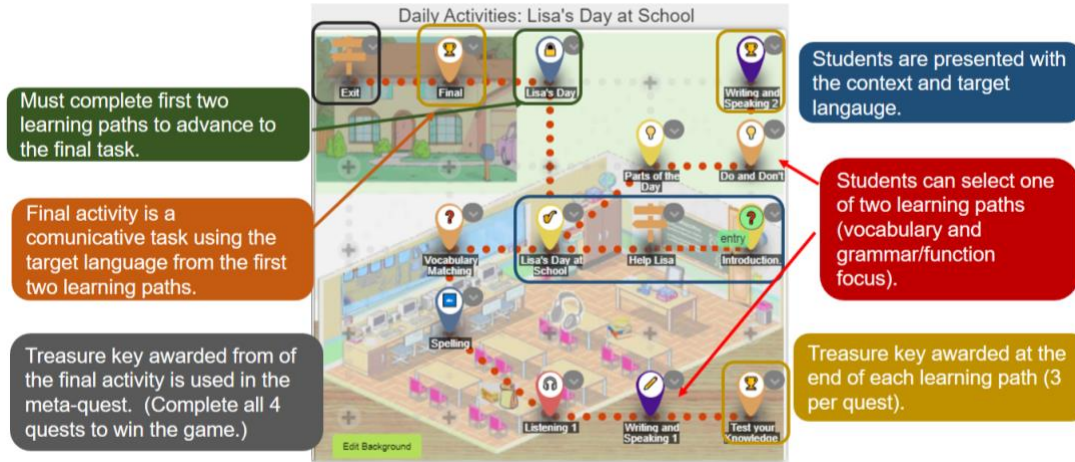
This action research project consisted of 4 stages: the preliminary stage, planning and development, implementation, and post-intervention data collection.

#### **3.6.1 Preliminary Stage**

The preliminary stage involved evaluating the viability of implementing a quest-based learning environment, taking into consideration the online learning tools available, the lesson for which it would be implemented, and the context it would be presented in. After extensive exploration and experimentation, deck.toys was chosen as the online learning tool. Despite making no claims of being a "quest-based" tool, deck.toys offered a highly customizable platform with an extensive feature set that could be used to create an engaging and dynamic learning environment adhering to the principles of quest-based learning; it also featured built-in analytics tools which tracked students' participation and responses to questions. Module 1 Lesson 4, "Daily Activities" was selected, as the language content could be easily separated into independent sections. Finally, "The Simpsons" was chosen for the context due to its broad appeal and familiarity with the characters, a large body of content which visual aids could be drawn from, and the teacher researcher's personal fondness for the show.

### 3.6.2 Development Stage

Once the context, content, and online learning tool were selected, the next stage was planning and development of the quest-based learning tool. Four separate quests containing the target language and a fifth meta-quest were created using the website [deck.toys](http://deck.toys). The target vocabulary and linguistic functions were listed and divided between the quests oriented around a character and a party of the day (e.g. Homer's Morning Routine). Images, gifs, and other visual aids were collected and occasionally modified using online resources for their use within the game. Communicative tasks as final objectives were established, and additional gamification elements, such as objectives and rewards were incorporated. The development process was a-linear and iterative. Activities, game elements, and learning paths were continually revisited, edited, pared down, expanded on, or removed, with the goal of making the game cohesive, engaging, beneficial, pedagogically sound, and to keep the format in line with a task-based approach. An effort was made to maintain a balance between simplicity and challenge, between comprehensiveness and brevity, and between functionality and usability throughout the development process (see Figure 3 below).



**Figure 3: Sample quest with explanations of the game format.**

Developing the research instruments occurred alongside building the learning tool. While motivation was the primary focus and the general research instruments had been outlined, the specific motivational perspectives and factors to be examined only became evident when reflecting on the elements that were included to entice student participation. This included the use of “The Simpsons” to engage the audience, creating an effective learning tool, aligning the intervention period with the lesson plan which immediately preceded an oral assessment, the inclusion of gamification elements, such as points and rewards, and the incorporation of an end goal. After these perspectives and factors of motivation were defined and categorized, a Likert scale and interview questions were developed to assess these factors.

### 3.6.3 Intervention Stage

Prior to the intervention, participants were added to a group on Microsoft Teams, created for the purpose of this action research project. An online orientation session using a power point presentation was conducted which briefly outlined the objectives and

procedures of the project, and provided instructions on registration and use of the website deck.toys. Students were then given 3 weeks and instructed to earn 6 treasure keys, working asynchronously. Any participation beyond that was voluntary. During this stage, the built-in analytics software tracked students' participation, and in-game exit polls were administered at the end of each learning path to inquire on students' use of mobile devices. The teacher researcher continually monitored students' progress throughout the intervention period and was attentive to any queries or issues that students had with either game functionality or specific activities. After observing lethargic participation and inactivity during the first week of the intervention, the teacher researcher sent out private messages to all students reminding them that the action research project period had started, provided a link to register on deck.toys, and welcomed students to contact the teacher researcher with any problems or questions they might have. A similar reminder message was sent out at the end of the 2<sup>nd</sup> week, but no direct interactions or synchronous sessions related to action research project were initiated by the teacher researcher during the intervention.

### **3.6.4 Data Collection Stage**

Upon completion of the intervention period, participants were contacted individually via private messages. Post-intervention questionnaires were administered using Google Forms, and post-intervention interviews were arranged for the following week. Data from the website was also collected manually and input into a spreadsheet. This included participation data pertaining to treasure keys, and the responses to the exit polls. The week following the intervention, one-on-one semi-structured interviews were conducted in which students responded to open questions about their experience and perceptions of the game.

### **3.7 Data Collection Techniques**

This study utilizes five instruments to generate both qualitative and quantitative data related to students' participation, motivation, and their use of mobile devices.

#### **3.7.1 Software Tracking**

Software tracking using deck.toys' built-in tool was used to measure students' participation and progress. Deck.toys allows for teacher-users to create classes, enroll students as users, and then assign maps or "decks" to those classes. Teachers can then monitor students' progress on assigned decks and review their students' submissions. Only the earning of treasure keys and completion of the game were considered when quantifying students' participation. Comparing the number of students that met, failed to meet, or exceeded the required 6 treasure keys, and/or completed the game indicated the extent of which the tool succeeded in motivating students (see Appendix A).

#### **3.7.2 Exit Polls**

Exit polls administered on deck.toys at the end of each learning path were used to inquire on students' use of mobile devices. Students were asked in their L1 whether they used a mobile device, a laptop/desktop, or both, to complete the recently finished activity. Their responses were registered with deck.toys tracking software, which were retrieved and recorded into a spreadsheet post-intervention (see Appendix B).

### **3.7.3 Questionnaire**

A post-intervention questionnaire inquiring on students' demographic information and home access to a computer and internet was administered at the conclusion of the intervention in the same form as the Likert Scale (see Appendix C).

### **3.7.4 Likert Scale**

Likert scales are a form of questionnaire that are used as a means of translating participants' qualitative thoughts and attitudes about a specific issue or topic into quantitative measures that can be analyzed (Joshi, Kale, Chandel, & Pal, 2015). These are presented in a series of statements (items) to which respondents indicate their level of agreement or disagreement from a list of predetermined option (Joshi, Kale, Chandel, & Pal, 2015). By definition, Likert scales are thematically consistent, with questions that are closely interrelated with each other, and as such, the results can be used to generate a reliable composite score related to the topic or issue addressed (Joshi, Kale, Chandel, & Pal, 2015).

A Likert scale measuring students' perceptions associated with motivational factors in their L1 was administered at the conclusion of the intervention. Students responded to 21 affirmative statements with their level of agreement / disagreement using a five-point scale: strongly agree, agree, neither agree nor disagree, disagree, strongly disagree. These 21 items corresponded to 8 motivational factors divided into 3 categories. These consisted of cognitive factors: interest, and goals; autonomy; affective factors: feelings of competency, achievement, and emotions; and behavioristic factors: immediate feedback and rewards. The results provided insights into how well these motivational factors were activated by the learning tool (see Appendix D).

### **3.7.5 Semi-structured Interviews**

A semi structured interview was administered post-intervention. Interviews allow the participants to share their perceptions and attitudes with the researcher and provide insight into their own experiences beyond what can be explored in a closed-response questionnaire and Likert Scales, providing a unique, detailed perspective on the quest-based learning tool (Berg and Lune, 2012). As this was a semi-structured interview, the dimensions to explore were specified, and a variety of open questions were outlined to ensure that the data gathered remained relevant to the study, while also allowing the interview to flow naturally and for participants to digress and potentially reveal important insights about their experience (Berg and Lune, 2012).

6 of the 8 participants were interviewed, as the teacher researcher was unable to coordinate with 2 students. The interviewer inquired on the interviewee's thoughts and opinions on different components of the platform and asked directed questions to gain insight into the motivational factors addressed by the game, as well as to inquire on the students' use of mobile devices for asynchronous study (see Appendix E).

## **3.8 Data Analysis Techniques**

Both quantitative and qualitative data analysis techniques were carried out after the conclusion of this intervention.

### **3.8.1 Software Tracking**

Software tracking data was extracted from the deck.toys website at the conclusion of the intervention period. Participation was measured based on the number of treasure

keys obtained and whether the student completed the game. Results were analyzed using descriptive statistics in order generate central tendency statistics, such as mean and standard deviation. The data was also triangulated with individual students' Likert Scale responses in order to compare students' motivation levels with their participation.

### **3.8.2 Exit Polls**

Exit polls which examine students' use of mobile phones were analyzed by calculating mean scores of each student to create a composite understanding of students' use of technologies.

### **3.8.3 Questionnaire**

Responses regarding participants' access to the internet / technology at home were examined to understand participants' limitations or facilities. This data was triangulated with Exit Poll data on students' use of mobile devices.

### **3.8.3 Likert Scale**

Likert scale responses on students' motivation levels were analyzed using the mean score and standard deviation (Boone, 2012). This was used to analyze perceptions related to motivational factors of the learning tool individually, categorically, and as a whole.

### **3.8.4 Semi-structured Interviews**

Interviews were transcribed using an automated transcription software and verified manually by the teacher researcher. As students' meaning is the primary focus of these interviews, a thematic analysis and frequency analysis were conducted to categorize students' statements into codes and sub codes, in order to identify common themes that emerged across a variety of students' testimonies.

# Chapter IV: Findings

The data collect instruments as described in the previous chapter will be analyzed separately according to the specific research objectives.

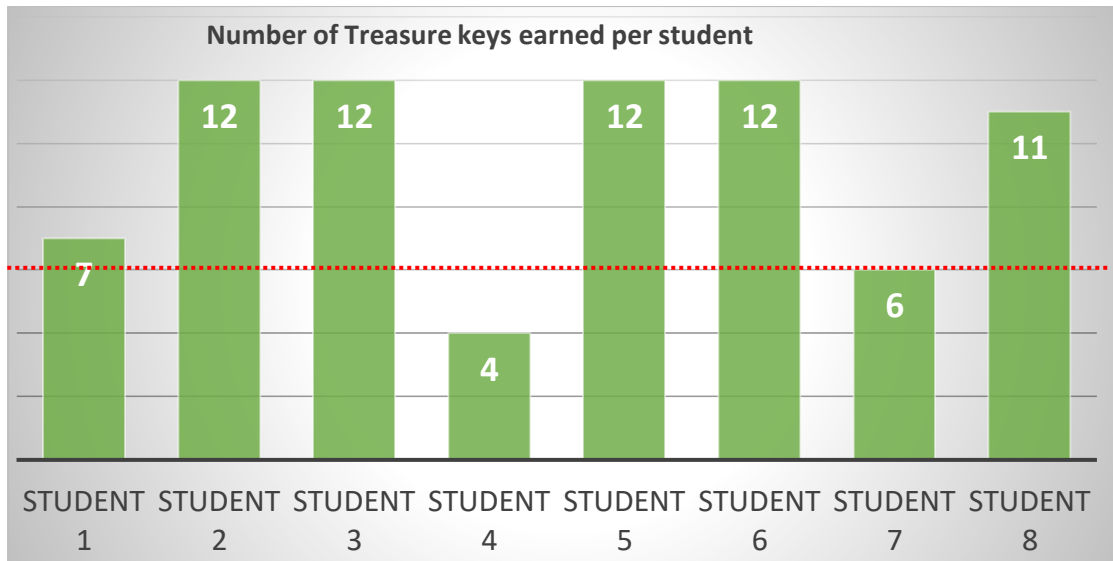
#### **4.1 Specific Objective 1: To study the influence of asynchronous quest-based learning on participation**

In order to measure the effects of Quest-based learning on participation. An online game using the principles of quest-based learning was created on the website deck.toys. The game consisted of 4 quests related to daily activities featuring a character from “The Simpsons”, and one meta-quest. Each quest featured 3 separate learning paths, and upon successful completion of each learning path, students would receive a treasure key. These consisted of a vocabulary path, in which students would do a variety of matching, spelling, and speaking exercises to learn and reinforce the target vocabulary; a grammar path, in which students learned and practiced communicative functions related to daily activities; and an integrated skills path, where students completed activities using the vocabulary and grammar from the previous two learning paths in order to finish the quest. Students could begin with either the grammar or vocabulary path; however, both the treasure keys at the end of the vocabulary and grammar paths were required to access the integrated skills path and to complete the quest. Upon completion of the final learning path, students would receive a treasure key which was used to open a lock in the 5<sup>th</sup> meta-quest. Students could complete all 4 quests to open the 4 locks and win the game.

In order to assess participation, students were instructed to find any 6 of the 12 treasure keys, that is, to complete half the game. This was used to establish a baseline level of participation which students could exceed, meet, or fail to meet. These parameters were based on personal judgement: to give students a clear guidelines on what the participation requirements were, which if completed would give them enough experience to form a clear opinion of the learning tool, while also allowing students to drop out guilt-free if they weren’t enjoying the game. If students exceeded the requirements and/or completed the game, it would indicate that this learning tool was successful in increasing participation. In total, 8 volunteer participants took part in this study.

##### **4.1.1. Software Tracking Data**

A built-in software tracking tool on the website deck.toys was used to monitor and record students’ participation. The number of treasure keys earned for each student is illustrated in the bar graph below (see Figure 4)



**Figure 4: Number of treasure keys earned by each student.**

Figure 4 shows the number of treasure keys (learning paths) earned by each student out of 12 total. The dotted red line indicates the requirement students were instructed to complete. The effects of quest-based learning on participation according to the data appear to be positive, with 7 of the 8 participants meeting the requirement (87%), while 1 student completed only 4 of 12 learning paths. Additionally, 4 of the 8 students (50%) completed the game in its entirety, with an additional student nearly finishing the game with 11 treasure keys and the 2 remaining students completing around half.

These results show that students earned an average of 9.5 treasure keys, with a standard deviation of 3.3, illustrating the substantial gap between those that complete the requirement and those that complete the game.

#### 4.1.2 Thematic and Frequency Analysis on Participation

A semi structured interview post intervention with 6 participants was also conducted. A thematic analysis and subsequent frequency analysis of students revealed that students' motivation and participation stemmed from three broad characteristics of the quest-based learning tool, which affected all 3 perspectives of motivation in this study. These were the game objectives, such as the rewards and completion of levels, the methodology, the activities the students engaged with, and content, the linguistic materials and context in which it was presented. (While methodology and content are very different concepts, they were often closely aligned in students' responses about motivation). All of these elements complemented each other in motivating students and fostering participation, with game objectives providing the rewards and incentives to continue playing, the methodology providing an entertaining and engaging experience, and content which is aligned with students' interests and needs (see Table 5).

Factor	Occurrences	Excerpt
Game Objectives	36	"Como te sentías después de cumplir una quest?"

		<p>“Me sentía, como, realizada...Que logré aprender un poco y logré llegar al final, un sentimiento así, como cumplir la meta.” --Student 3</p> <p><i>“How did you feel after you finished a quest?”</i></p> <p><i>“I felt, like, accomplished... that I managed to learn a little, that I managed to get to the end, a feeling that I had achieved a goal.”</i></p>
Methodology	81	<p>“No era así como muy difícil. Pero sí era bien didáctico como para ir forzándola. Ya los contenidos de cada actividad... es útil, porque cuando uno está en este nivel de inglés, bueno, necesita reforzar ese y como repetir, repetir, repetir y era lo que uno iba haciendo con, a medida que uno iba avanzando.” --Student 6</p> <p><i>“It wasn’t hard, but it was very didactic, reinforcing the contents in each activity... it’s useful because when one is at this level of English, well, you need to reinforce and repeat, repeat, repeat, and that was what you did in the way you advanced in the game.”</i></p>
Content / Context	52	<p>“Sí, lo encontré útil. Eh, eh, eh. Porque como tenía cada personaje tenía distintas actividades del día, entonces se podía adecuar a cualquier situación y además sólo con el juego yo estudié para la entrevista.... Entonces luego fue sólo repasar antes de la entrevista. En cambio, los otros contenidos que no estaban en el juego tuve que estudiarlo y practicarlos más.” –Student 2</p> <p><i>“Yes, I found it useful. Because each character had different daily activities, so one could relate it to any situation, and also I only used the game to study for the interview. Later on, I just had to review the content before the interview. On the other hand, for the other content that wasn’t in the game, I had to study and practice more.”</i></p>

**Table 5. Thematic and frequency analysis of the game’s characteristics that were beneficial to participation.**

These categories weren’t exclusive to specific motivational factors. Game objectives satisfied the cognitive factor of *goals*, the affective factor of *achievement*, and

the behavioristic factor of *rewards*. The methodology and content both satisfied the cognitive factor of *interest*, and the affective factors of *competency* and *emotion*, and methodology also addressed the behavioristic factor of *immediate feedback*.

These 3 factors complement each in the sense that the content is relevant to the students' needs, the methodology is perceived to be useful and effective, and the game objectives keep the student actively engaged in the game as they strive to meet those objectives.

However, this isn't to say the tool was flawless or that following this methodology will guarantee engagement. Other factors proved to be detrimental to students' participation (see Table 6).

Factor	Number of occurrences	Excerpt
Time constraints	8	<p>“Traté de avanzar y avancé bastante ese día. Y después al otro día no tuve chance de jugar porque estaba haciendo una tarea que el profesor me había mandado hacer. Tuve como dos días sin poderlo usar” –Student 7</p> <p><i>“I tried to make progress, and I got through quite a bit that day. And the next day I didn't get a chance to play it because I was working on an assignment that the professor sent. I couldn't log on to the game for like 2 days.”</i></p>
Getting stuck	7	<p>“En la imagen de Lisa, por ejemplo, yo no lo pude terminar porque yo no lo entendí la parte que dice final ya,” --Student 1</p> <p><i>“On the last image of Lisa, for example, I couldn't finish it because I didn't understand the part that said 'Final'.”</i></p>

**Table 6: Factors that were detrimental to participation.**

Table 6 shows the common factors that were detrimental to participation. This includes instances directly observed by the teacher researcher. Students 1, 3, and 7 mentioned time constraints and academic obligations as an obstacle in their participation, and the teacher researcher was unable to coordinate an interview with student 4 due to a busy schedule, which is understandable as these were graduate students approaching the end of the semester.

Furthermore, on rare occasions students expressed “getting stuck” and being unable to advance, this could be either due to a software glitch, confusing or difficult activities, or students experiencing a mental block. While getting stuck was a relatively

infrequent occurrence during this intervention, it did seriously curtail Student 1’s continued participation, as she couldn’t finish Lisa’s final activity and finish the quest.

In anticipation of this problem, the teacher researcher conducted and recorded an orientation session with a Power Point to explain different game functionality, he created a “tutorial” activity within the game to illustrate different mechanics and functionality, and he emphasized his availability and willingness to assist students with any problems they encountered. Indeed, Students 4, 5, 6, and 7 all requested assistance with either navigating the game architecture or help with completing activities at some point during the intervention. Meanwhile, Student 1 and Student 7 both discussed getting stuck at an activity and not being able to advance further, and Student 5 stating that she almost gave up on an activity after multiple attempts.

**4.2 Specific Objective 2: To analyze the motivational factors activated by the learning tool**

In this study, 8 motivational factors were explored across 4 perspectives. These were analyzed using a post-intervention Likert scale and a thematic and frequency analysis of post-intervention interviews.

**4.2.1 Overall Results**

**4.2.1.1 Likert Scale**

The post intervention Likert scale was administered to all participants. It consisted of 21 items addressing the 8 motivational factors across 4 perspectives. The results are summarized below (see Table 7).

<b>Item</b>	<b>Mean</b>	<b>SD</b>
Interest factor	4.50	0.62
Goals factor	4.42	0.58
<b>Cognitive Factors</b>	<b>4.46</b>	<b>0.60</b>
<b>Autonomy</b>	<b>4.25</b>	<b>0.71</b>
Feelings of Competency	4.29	0.55
Feelings of Achievement	4.38	0.72
Emotions	4.25	0.79
<b>Affective Factors</b>	<b>4.30</b>	<b>0.68</b>
Feedback	4.06	1.12
Rewards	4.25	0.95
<b>Behavioristic Factors</b>	<b>4.23</b>	<b>0.97</b>
<b>Composite Score</b>	<b>4.33</b>	<b>0.74</b>

**Table 7: Likert scale results for motivational factors and perspectives.**

The responses to the Likert scale suggest that the students felt the game was motivating overall (mean score of 4.33 out of 5 with a standard deviation of 0.74). Of the

four perspectives, they felt the game was the most cognitively motivating (Mean: 4.46; SD: 0.60). This was followed by affective motivation (Mean: 4.30; SD: 0.68), feelings of autonomy (Mean: 4.24; SD: 0.71), and finally behaviorist motivation (Mean: 4.23; SD: 0.97). These are explored in greater detail in the subsequent sections.

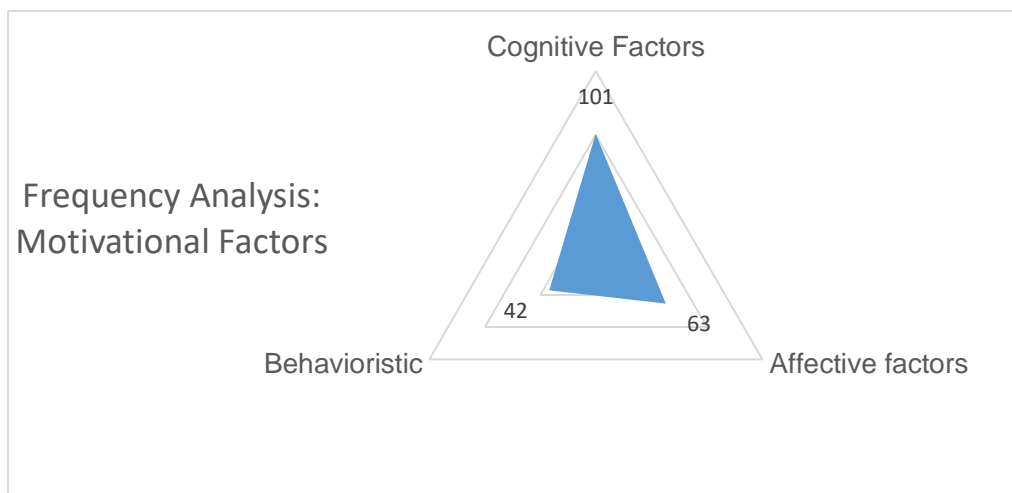
#### 4.2.2 Thematic Analysis

A post intervention interview was conducted with 6 of the 8 participants. These were subsequently transcribed, coded, analyzed thematically, and quantified. Codifying and categorizing statements related to motivation was subjective and based on interpretation. It often involved assigning long responses with multiple codes, so as to preserve the meaning as needed for reference. This is illustrated by the beginning of Student 2's answer to the opening question "What did you think of the game?"

"El juego me pareció divertido. O sea, se nota que es un juego con objetivo de enseñanza, cierto? Pero igual es muy didáctico, sobretodo porque los personajes son los Simpson y gente de nuestra generación. Si así conoce Los Simpson y vio Los Simpson toda su vida, entonces la etapa es igual muy adecuada a cada personaje de los Simpson. entonces muy relacionada al contenido. Es divertido en general."

*"I thought it was fun. I mean, you can tell it's a game with a learning objective, right? But it was really didactic, especially because the characters were The Simpsons, and people of our generation, we all know The Simpsons and watched The Simpsons all our lives. So the stages were also very appropriate for each character of The Simpsons, and well related to the content. It was really fun in general."*

Nevertheless, it provided a good representation of the students' most prevailing thoughts and attitudes about the game (see Figure 5).



**Figure 5: Frequency analysis of students' responses to interview questions.**

As the diagram illustrates, elements related to cognitive factors (101) were most frequently mentioned, followed by affective factors (66), then behavioristic factors (39). Autonomy (4, not shown) was not prevalent during the interviews.

## 4.2.2 Cognitive Factors

### 4.2.2.1 Likert Scale of Cognitive Factors

Cognitive factors on motivation refer to the internal means-end analysis one does when deciding whether to engage in an activity (Eccles and Wigfield, 2020). That is, the perceived value of an activity in relation to its cost. This study focused on two factors: interest and goals. Participants expressed their level of interest in the context (item 1) and the content (item 2), as well as the learning tool furthering their interest in the topic (item 3), and evaluating the cost and the perceived benefits, in this case time (item 4). Goals in this context refer to striving for an objective that is immediate relevant to the students (item 5) (Sailer et.al., 2013), as well as performative goals (item 6), i.e. getting a good grade, and mastery goals (item 7), developing one's English skills (Da Fonseca and Moller, 2006) (see Table 8).

Item	Mean	SD
1. Context	4.38	0.52
2. Content	4.75	0.46
3. Instill further interest in English	4.50	0.76
4. Effective use of time	4.38	0.74
<b>Interest factor</b>	<b>4.50</b>	<b>0.62</b>
5. Relevant learning objectives	4.50	0.53
6. Performative goals	4.50	0.53
7. Mastery goals	4.25	0.71
<b>Goals factor</b>	<b>4.42</b>	<b>0.58</b>
<b>Cognitive Factors</b>	<b>4.46</b>	<b>0.60</b>

**Table 8: Students' responses to Likert scale items related to cognitive factors.**

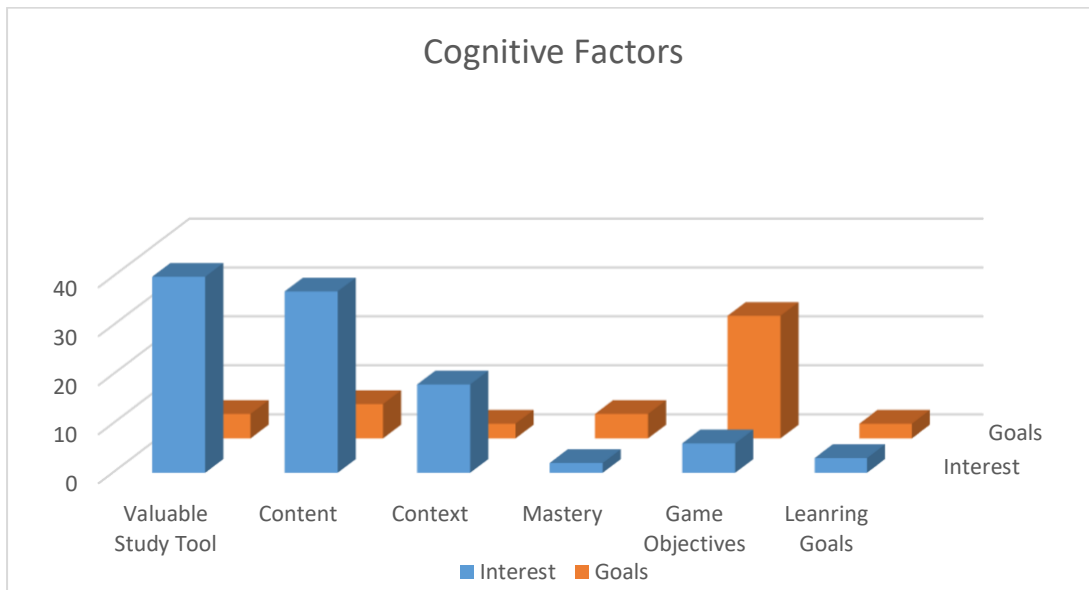
As the table illustrates, students' responses indicate that the learning tool was cognitively motivating. Participants' expressed an overall strong interest in the online learning tool, particularly the use of the target language (Item 2, content), while also aligning with their learning goals. Interestingly, students felt that the learning tool would help them obtain better grades (items 5 and 6) slightly more than it helped them learn English (Item 7).

### 4.2.2.2 Thematic Analysis of Cognitive Factors

Statements coded under *Interest* were organized into three different themes: 'Context' was used for positive references of "The Simpsons" or the presentation. 'Content', which relates to English or to language learning, and 'Valuable learning tool', when a student provided a positive assessment of the game as a learning tool.

Goals consisted of 3 categories: Mastery goals, learning goals, and game objectives. In the context of this study, mastery and learning goals are similar to the "Content" and "Valuable study tool" themes of Interest. The only difference is the orientation, of which there were few statements that framed language learning as a goal.

The majority of references for goals corresponded to in-game objectives such as finishing the game, obtaining treasure keys, or completing quests (see Figure 6).



**Figure 6: Number of coding references for themes related to Interest and Goals.**

As Figure 6 illustrates, substantially more references to interest (106) were coded compared to goals (48). Of those, ‘Valuable study tool’ (40), ‘Interest in content’ (36) and ‘Game objectives’ (25) were the most common. Student 1’s comments reflect her interest in the study tool.

“Entonces si eso, te enriquece mucho. Entonces en la forma que esta cada sección te permiten trabajar los mismos conocimientos desde diferentes habilidades... o sea no es como que pases por algo que ya pasaste porque después tienes que repetir ..como devolver para ver si los memorizaste hablando ,te dan una imagen y entonces debe responder de otra forma después con la grabación a mi eso me pareció muy bien.”

*“So yeah that, it’s very enriching. Like, the way that every section allows you to work with the same knowledge using different abilities... that is to say, it’s not like you go over something that you already saw, because then you have to repeat it, like go back to see if you memorized them with speaking. It shows you an image, and so you have to respond in a different way with the recording. I thought that was really good.”*

Meanwhile, Student 6’s comments illustrate how the game objectives and context create an intrinsic need to meet the goals.

“Sí, porque en cierta manera es como que te incita o te motiva a terminar para ver qué es lo que te estás perdiendo, si es que no lo haces. Igual vas

a quedar con la duda de que sí. Que es lo que hay? Que es lo que me estoy perdiendo si ya no la termino? Entonces es curiosidad que al final uno estudia o busca algo por curiosidad para responder qué es lo que hay. Entonces, en ese sentido si.”

*“Yeah, because in some way it incites you or motivates you to finish to see what you were missing if you don’t do it. You’re going to be left wondering ‘What is there? What am I going to be missing if I don’t finish the game?’ So it’s curiosity that keeps you studying and or looking for something out of curiosity to see what is there. That’s how I felt.”*

### 4.2.3 Autonomy

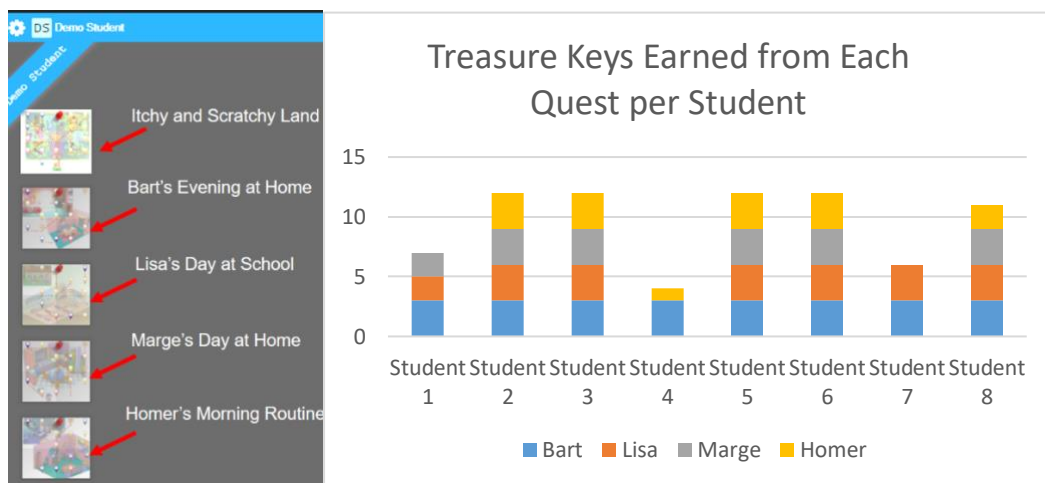
#### 4.2.3.1 Likert Scale of Autonomy

Autonomy refers to students’ self-determination within a gamified environment or a learning context (Item 8). It doesn’t quite align with the other motivational perspectives explored in this study, but it is a cornerstone of quest-based learning (Haskell, 2013), and an extensive effort was made to facilitate autonomous learning into the game architecture and intervention design (see Table 9).

Item	Mean	SD
<b>8. Autonomy</b>	<b>4,25</b>	<b>0,71</b>

**Table 9: Likert scale results for autonomy.**

Interesting, examining the participation data revealed that students approached the game linearly. The researcher teacher explained that the students could do any activity in any order, and included a slide in the meta-quest which indicated the target language of each treasure key, but there is no strong indication that students used it to guide their learning. All students completed Bart’s Evening at Home, followed by Lisa’s Day at School, and participation dropped off precipitously for Marge and Homer which corresponded to the top-to-bottom order in which the quests were presented on the deck.toys website (see Figure 7).



**Figure 7: Comparing the order the quests were presented to student participation.**

**4.2.2.2 Thematic Analysis of Autonomy**

*Autonomy* was considered throughout the planning and development process of the game. 2 students commented that they were able to leverage the multiple learning paths to their advantage to navigate the platform, which reflected part of the teacher researcher’s intent (4 occurrences total). This is illustrated by the following excerpt from Student 5:

“Y me parecía fantástico porque no es usa una sola ruta. A veces cuando es una sola ruta como que uno se frustra porque me equivoco y ahí me quedo, como que me quedo plantada, pero podía seguir la otra ruta y luego cuando ya otra vez volvía, o sea, me daba facilidad.” –Student 5

*“And I thought it was fantastic because there wasn’t just one route. Sometimes when there is just one route, you get frustrated because I make a mistake and I get stuck there, but I could go down the other route, and later when I came back, that is, it made it easier.”*

However, there were more occurrences that were critical of the autonomy fostered within the game. Students expressed issues with navigation, the linear nature in which students perceived the game, believing they had to start with Bart’s Evening at Home before advancing to Lisa’s Day at School. Learner support refers to when students get stuck on activities, the platform didn’t always provide constructive feedback or hints to help them advance. Students also expressed interest in having easy access to a bank of contents they could refer to while in the middle of activities. Student 1’s comment reflects her issues with reference materials and infers on the issue of learner support (see Table 10).

Criticism	Number	Excerpt
Navigation	3	
Reference Materials	3	A mí lo que me paso es que cuando tú fallas en ese momento ya no te deja pasar y entonces como que te paralizas ahí en el juego y la opción que tenía era preguntarle, escribirle con lo que me paso con Lisa por ejemplo que ahí no entendía la orden. O no sé si, por ejemplo, si es viable añadir una tabla de contenido en la que tú la repases completa, porque en ese momento me paralizado ahí y no podía avanzar, no podía ir para atrás y tenía que comunicarme con usted para salir del problema o recurrir a libros u otras opciones, pero si el juego tiene esa parte ya, seria autónomo. -Student 1
Learner Support	4	

		<p><i>“What happened with me was when you fail, at that point it doesn’t let you continue and so it’s like you get paralyzed in the game and the only option was to ask you [the teacher], write to you about what happened to me with Lisa, for example, where I didn’t understand the order. Or I don’t know if, for example, it would be viable to add a table of contents that you can go over completely... because in that moment I was stuck there and I couldn’t advance, I couldn’t go back, and I had to talk with you to solve the problem, or refer to books or other options, but if the game had that part, it would be autonomous.”</i></p>
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**Table 10: Frequency analysis of criticisms of autonomy.**

#### 4.2.4 Affective Factors

##### 4.2.4.1 Likert Scale of Affective Factors

Affective factors refer to the feelings and emotions that one experiences when engaging in activity which can encourage or discourage continued participation (Weiner, 2004). This study analyzes *feelings of competency, achievement, and emotions*. *Competency* refers to the affective reaction of one’s abilities in states of failure and success. If students believe that success or failure is internal, can be improved with effort, and is within their control, they are more motivated to correct failure states, and feel more competent in success states (Weiner, 2005). Item 9 inquires on whether the language level was appropriate; Item 10 inquires on game functionality; while Item 11 asks about feelings of competency directly. Weiner (2014) describes achievement as an affective award in which a sense of pride of accomplishment is derived from succeeding in a task (Item 13), and its intensity is influenced by the perceived difficulty of the task (Item 12). The emotional state that an activity provokes can motivate someone to decide whether to continue engaging in an activity or not (Sailer, et. al., 2015). Students responded to whether or not they enjoyed the game (Item 14), if it provoked positive emotions (item 15) or if it provoked negative emotions (Item 16) (see Table 11).

Item	Mean	SD
9. Appropriate level	4,38	0,52
10. Achievability / preparation	4,25	0,71
11. Feelings of competency	4,25	0,46
<b>Feelings of Competency</b>	<b>4,29</b>	<b>0,55</b>
12. Challenging	4,38	0,74
13. Achievement	4,38	0,74
<b>Feelings of Achievement</b>	<b>4,38</b>	<b>0,72</b>
14. Entertaining	4,25	0,71

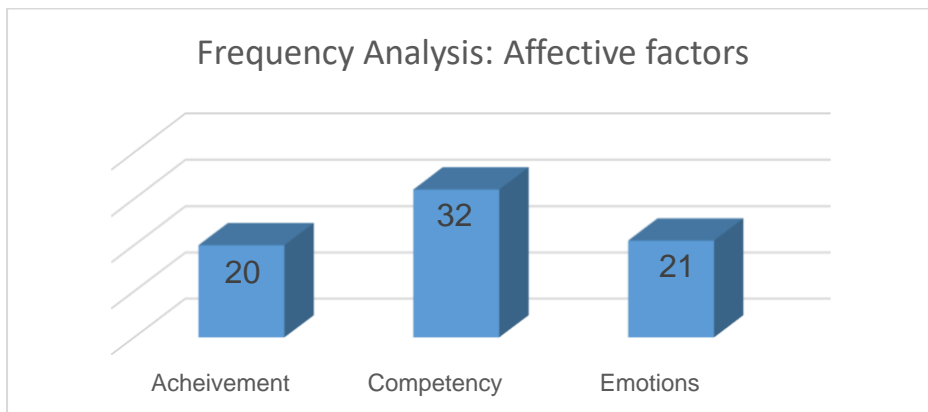
15. Positive Emotions	4,25	0,89
16. Negative Emotions	4,25	0,89
<b>Emotions</b>	<b>4,25</b>	<b>0,79</b>
<b>Affective Factors</b>	<b>4.30</b>	<b>0.68</b>

**Table 11: Likert scale scores for affective factors.**

Generally, participants felt the game fostered feelings of competency and didn't present any major flaws. Students' responses suggest that the tool succeeded in instilling a sense of accomplishment. It provoked generally positive emotions and enjoyment and didn't invoke many negative emotions.

#### 4.2.4.2 Thematic Analysis of Affective Factors

Affective factors were divided into 3 motivational factors. *Feelings of competency* consisted largely of statements related to clear instructions and gameplay (9 references), language improvement and/or performance (11) and manageable linguistic content (9). *Achievement* was closely associated with completing objectives and overcoming challenges within the game and emerged as having a substantial overlap with the *goals* factor, with the distinction that *achievement* carries with it a sense of pride. As such, coding these statements was likely subject to interpretation error. Finally, statements were codified for emotions when they included adjectives like "enjoy", "fun", "entertaining," "happy," etc. Again, these references can overlap with other motivational factors (see Figure 8).



**Figure 8: Number of coding references for affective motivational factors.**

As the figure shows, *competency* was the most prevalent factor, which included clear instructions and gameplay (9 references), appropriate level of linguistic difficulty (9) and language improvement and/or performance (11). These are reflected in Student 2's comment:

“Los contenidos lo había visto en clases, pero no los había estudiado, no los había repasado cuando entré a la plataforma. Entonces eran contenidos que sí me parecían conocidos, pero que no me lo sabía bien. O sea, no podía pronunciar bien la palabra ni organizar una oración, por ejemplo, sin estudiar o sin jugar el juego. Entonces, igual como nivel

intermedio para mí. No era muy difícil y como estaba muy lógicamente organizado ehh, eso hizo más fácil, igual el juego y-- pero no lo encontré difícil.”

*“I had already seen the contents in class, but I hadn’t studied them, I hadn’t gone over them when I went on the platform. So the contents were familiar to me, but I didn’t know them well. I mean, I couldn’t pronounce the word correctly nor organize a sentence, for example, without studying or without playing the game. So, it was intermediate level for me. It wasn’t difficult, and since the game was very logically organized, it made it easier, the game also, and-- but I didn’t find it difficult.”*

#### 4.2.5 Behavioristic Factors

##### 4.2.4.1 Likert Scale of Behavioristic Factors

Behavioristic factors are associated with BF Skinner’s operant conditioning, in which completion of a desired behavior is rewarded (items 17-20) with an immediate stimulus (item 21) (Chen, 2011) (see table 12).

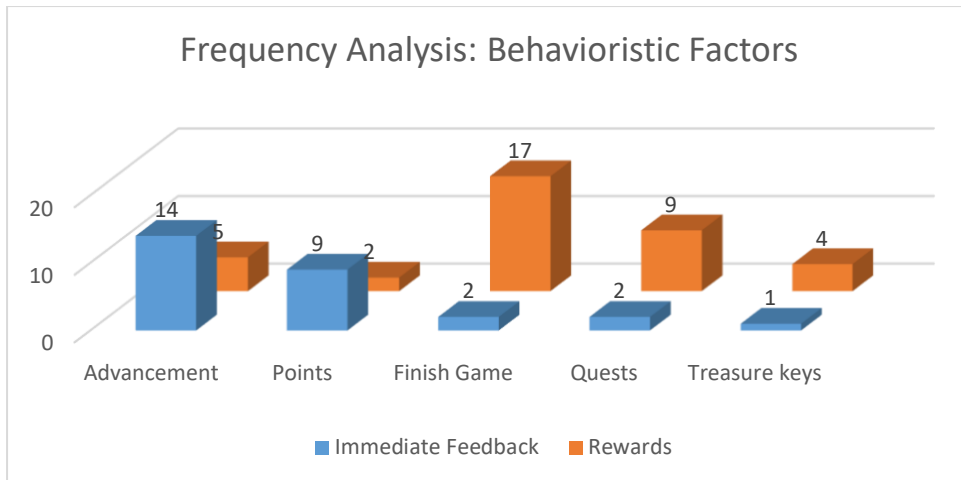
Item	Mean	SD
17. Points	4.00	1.20
21. Quality Feedback	4.13	1.13
<b>Feedback</b>	<b>4.06</b>	<b>1.12</b>
18. Treasure Keys	4.25	1.04
19. Quests	4.50	0.76
20. Completing the game	4.25	0.89
<b>Rewards</b>	<b>4.25</b>	<b>0.95</b>
<b>Behavioristic Factors</b>	<b>4.23</b>	<b>0.97</b>

**Table 12: Likert scale scores for behavioristic factors.**

While still positive, behavioristic factors were the lowest rated with a mean score of 4.23. They were also the most polarizing of the 4 categories, as reflected by the standard deviation of 0.97.

##### 4.2.4.2 Thematic Analysis of Behavioristic Factors

During the analysis, the scope was limited to gamification elements, both to reduce subjectivity of what constituted a ‘reward’ and to focus on the gamification elements directly (see Figure 9).



**Figure 9: Number of coding references themes related to behavioristic factors.**

The themes most frequently mentioned by students were ‘finishing the game’ and ‘advancement’, followed by ‘completing quests’ and ‘earning points’. Behavioristic factors are perhaps best illustrated by the following interaction between Student 3 and the teacher researcher.

Student 3: “Si, aprender un poco igual. Pero usualmente completaba el mapa porque una actividad tras otra te hacía obligatoriamente llegar al final.”

Teacher: ¿Por qué dijiste que te obligaba?

Student 3: Porque quería obtener la otra llave y abrir la puerta.”

*Student 3: “Yeah, I also learned a little. But I usually finished the map because one activity after the other made it obligatory to get to the end.”*

*Teacher: “Why do you say it obligated you?”*

*Student 3: “Because I wanted to get the next key and open the door.”*

#### 4.2.6 Critiques and Suggestions

Participants also provided their constructive feedback, critiques, and suggestions during the interview. For simplicity and easy reference, the most frequently recurring were included in the following table (see Table 13).

Criticism	Frequency	Excerpt
Confusing Game Layout	9	“Al comienzo tuve que entrar [la plataforma] como dos veces, tres veces porque no podía entrar, no le entendía, o sea, si le hago clic acá. No me salía nada, me salía lo mismo y decía ‘¿Dónde está el otro botón que me decía siguiente?’ Y no había un siguiente. O

		<p>sea, como que al comienzo me perdí. Esa fue la partecita que me...[confundía]" –Student 5</p> <p><i>"At the beginning I had to enter [the platform] like two, three times because I couldn't get in, I didn't understand it. I mean, if I clicked here, nothing happened, and I said to myself "where is the other button that said "next"? And there was no "Next". Like at the beginning I got lost. That was the part that got me confused."</i></p>
Confusing Activities	10	<p>"Y no supe lo que era porque lo intente varias veces cuando estuve realizando la actividad y entonces como no me dejaba avanzar para la próxima , porque no lo había hecho bien , pero entonces ya no sabía que hacer.. bueno lo dejo ahí entonces." --Student 1</p> <p><i>"And I didn't know what [the answer] was because I tried several times when I was doing the activity and it didn't let me advance to the next activity because I didn't do it correctly. So, I didn't know what to do, well, I just gave it up then."</i></p>
Repetitive Gameplay	7	<p>"Y eso de la variedad es lo mismo, como que pasa con las llaves, entonces tú ya sabías como qué actividades te iban a aparecer, en los otros mapas partidarias dando cuenta de que se iban. Quizás no en el mismo orden, pero sí repitiendo las actividades." --Student 6</p> <p><i>"And the thing with variety is the same that happens with the keys, so you already knew, like, what activities were going to appear, on the other parts you started noticing which were coming. Maybe not in the same order, but the activities did repeat."</i></p>
Improve Audio / Visuals	8	<p>"¿Del juego? Tal vez aspectos más informáticos como como del de la estructura. A ver cómo te lo explico, no me manejo tanto en eso. Pero hacer que la calidad de la imagen del juego fuera más atractiva." –Student 2</p> <p><i>"From the game? Maybe more programming aspects,</i></p>

		<i>like the structure. How do I explain this, I don't know really know much about it. But make the quality of the game imagery more attractive."</i>
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**Table 13: Thematic and frequency analysis of general criticisms.**

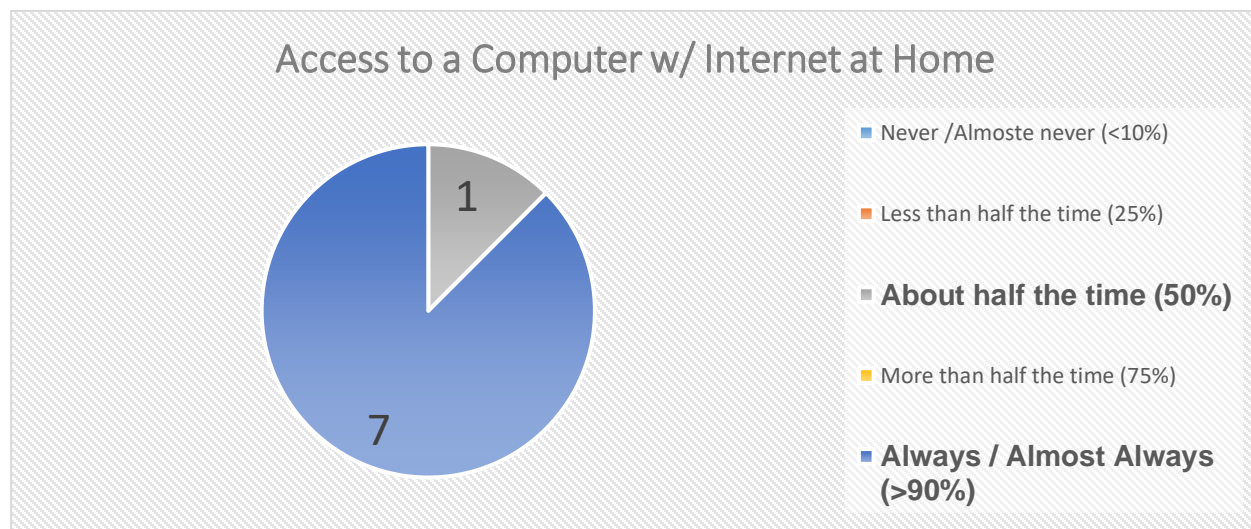
Several students reported being confused by the game layout at the beginning of the intervention. They also mentioned problems with the instruction and layout of some activities. It was also suggested that the gameplay should be more varied, as all the quests follow the same basic format. Finally, audio and visuals needed improvement. A few said the game looked like it was designed for children, and others expressed interest in audio dialogues or videos for listening comprehension.

### 4.3 Specific Object 3: To inquire on students' use of mobile devices while using the online learning tool

One of the current limitations of the current UdeC English Online platform is that is not accessible on cellphones or tablets. Students must use a computer to log on to study, which is out of sync with current online user habits in Chile (Branch, 2021) and presents a barrier of entry for those who have limited access to compatible hardware or the internet at home. The study inquires on both accessibility limitations and study habits to better understand participants' behavior, and provides an opportunity to explore any limitations or flaws the deck.toys mobile website presents.

#### 4.3.1 Accessibility

A questionnaire was administered to the participants to gain a better understanding of their access to technology and the internet at home (see Figure 10).



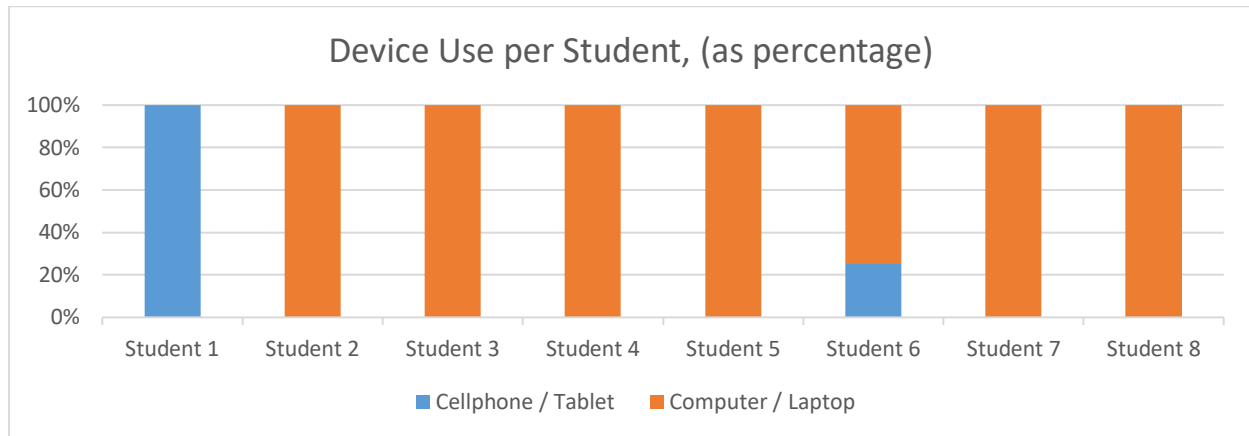
**Figure 10: Students' self-reported access to a computer with internet at home.**

Of the 8 participants, only 1 student reported having restricted access to a computer with internet at home. The remaining students didn't have any problems with connectivity. As these are graduate students, they likely don't represent the same socio-economic diversity as the undergraduate student body.

During the interviews, Student 1 reported that she did all her work on her iPad using a data connection because she had recently sold her Wi-Fi at home. It's not clear what was meant by this. The teacher researcher isn't familiar with the internet situation in Cuba. Student 7, another Cuban native living in Chile, mentioned that she was using a laptop that the university lent her for the duration of her degree, so she "didn't need to use her phone to study."

#### 4.3.2 Mobile Phone Use

Exit polls at the end of each learning path provided data on students use of mobile devices when playing the game (see Figure 11).



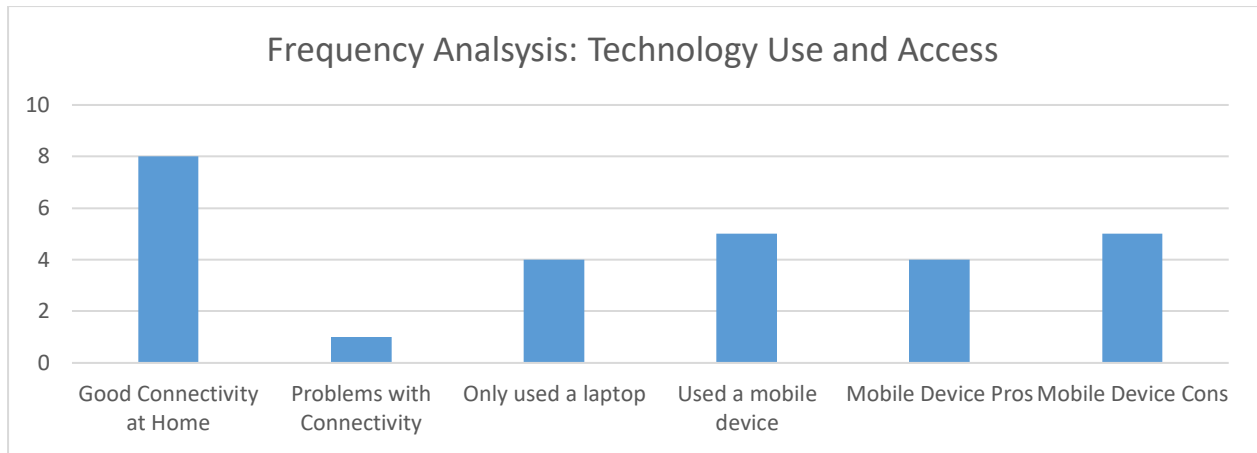
**Figure 11: Students' use of mobile devices and computers to access the learning tool.**

Deck.toys was accessed primarily using a computer. Only 2 of the 8 used a mobile device to access the platform, while the remaining students used a laptop or PC exclusively. Of those two students, Student 1 accessed the platform exclusively on a mobile device (an iPad), while Student 6 used a cell phone occasionally (25%).

#### 4.3.3 Thematic Analysis of Connectivity and Mobile Use

In the interviews, both students 1 and student 6 mentioned enjoying the comfort and flexibility that using a mobile device provides. Student 1 said she enjoyed her iPad "because you can sit on the couch, and.... with the mobile device its really comfortable because you can use it anywhere. You don't necessarily have to sit down at a table."

On the other hand, Students 2, 3, 5, and 7 mentioned a preference for laptops or a computer to study in general. Student 5 said, "I don't like to work on my phone. It's hard to see. Really small." (see Figure 12).



**Figure 12: Number of coding references related to mobile device use and internet connectivity.**

# Chapter V: Discussion

In this chapter, the data obtained are discussed, and implications for future implementation are also included.

### **5.1 Specific Objective 1: To study the influence of quest-based learning on asynchronous participation**

Among the 8 participants in this study, 4 participants (50%) completed the game in its entirety, 2 additional participants exceeded the requirement (75%), another met the requirement, (87.5%), while 1 student failed to meet the requirement (12.5%). These results indicate that the tool was successful in increasing participation within the test group. These findings are similar to those of Haskell (2013), Perry (2015) and Snelson (2021), all of whom found student engagement exceeded course requirements while using quest-based learning. These findings suggest that implementing a quest-based learning platform could entice greater participation in asynchronous guided language instruction, potentially bringing participation closer to the recommendations outlined by CEFR (Council of Europe, 2018). This in turn could lead to better learner outcomes at the end of each module and at the end of the program.

#### **5.1.1 Methodology, Game Objectives, and Content and Context**

A thematic analysis of the post-intervention interviews revealed three prominent themes which engaged students. These were the methodology, game objectives, and the content and context. Despite the small sample size, the Likert scale results and responses in the interviews suggest that similar results could be seen with a larger group, but with a few caveats.

Methodology refers to the pedagogical structure and activities within the game. Students felt the materials and activities were within their abilities, which indicates they experienced feelings of competence (Weiner, 2005; Schunk, 2020). Students mentioned that the game allowed for meaningful, repetitive practice of a variety of skills, including vocabulary, writing, spelling, and speaking. This suggests a high perceived utility value of the tool (Eccles and Wigfield, 2020; Vanslambrouck et. al, 2018). The lessons followed a task-based approach, and the teacher researcher limited the content to what was needed to complete the task (Ellis, 2003). This kept learning paths and quests relatively short, simple, and achievable in one sitting, which kept effort and opportunity costs low (Vanslambrouck, et. al, 2018; Eccles and Wigfield, 2020). It also created natural stopping points in the game which left students with a sense of completion and achievement (Schunk, 2020; Chen, 2011; Weiner, 2010).

The most salient game objectives for the participants were completing quests and completing the game. Students were provided with the premise: “The Simpsons are going to Itchy and Scratchy Land... tomorrow. Help them get through Friday.” The game consisted of four quests, one for each family member. Students were presented with a series of vocabulary and grammar activities, culminating in performing a communicative task e.g., “explain to Homer his morning routine.” These objectives were attainable and proximate, which is in line with social-cognitive theory (Schunk, 2020). Completing quests and earning treasure keys also provided behavioristic rewards to entice further participation (Chen, 2011). Meanwhile, the end-game meta-quest enticed students to continue playing until they finished the game and reached “Itchy and Scratchy Land.” This suggests that the narrative and game objectives were meaningful for students, and may

have fostered feelings of achievement (Lenz et. al. 2018, Sailer et. al., 2017). This is in line with Sailer's (2013) prediction that clear goals lead to higher levels of motivation.

Interestingly, several students were under the impression that they needed to complete the game in its entirety. This implies the platform instructions and gameplay overshadowed the 6 treasure key requirement mentioned in the orientation. Furthermore, the requirement was likely responsible for initiating participation. It was during the completion of this objective that the game grabbed students' attention and motivated them to continue playing and complete the game. This suggests that incorporating a participation requirement into a quest-based learning platform could compel unmotivated students to engage with a platform and possibly exceed participation expectations.

The content and the context also emerged as a frequently cited theme during the frequency analysis. The target vocabulary, grammar and functions presented in the game corresponded to the English lesson at the time, and the intervention period preceded an oral interview. This may have contributed students' perceptions of the tool as relevant, appropriate and useful for the students. This again speaks to the perceived utility value of the tool (Eccles and Wigfield, 2020; Vanslambrouck et. al, 2018). For context, the premise and visual aids were drawn from "The Simpsons," which made the presentation of target language more memorable, enjoyable, and contextualized. Using "The Simpsons" also allowed for the creation of a narrative and game objectives that were more relevant and meaningful to some students (Sailer et. al., 2017). 3 students said they completed the game because they wanted the Simpson family to get to "Itchy and Scratchy Land." The approachable content and narrative helped foster task interest and created cognitive, affective, and behavioristic consequences for completing the game (Eccles and Wigfield, 2020; Schunk, 2020; Weiner, 2014; Chen, 2011).

These factors complemented each other. The content and context were relevant to the students' needs and interests and appropriate for their language level. The methodology was perceived to be didactic, useful and effective. Finally, the game objectives kept the student actively engaged in the tool as they strived to meet those goals. This demonstrates the way in which quest-based learning combines a game-like experience with a task-based approach to motivate learners and incentivize participation (Haskell, 2013). In particular, it highlights the importance of making activities didactic, relevant, and useful in order to appeal to adult learners who may not be swayed by gamification elements alone, and the importance of clear and attainable objectives. This addresses a question posed by Snelson (2021) regarding the motivational mechanisms associated with quest-based learning. However, the game also presented some flaws which were detrimental to autonomous learning participation.

### **5.1.2 Hindrances to Participation**

There were instances where students' participation was hindered by difficulty with an activity and time constraints. As these were graduate students approaching the end of the semester, time constraints which limited participation among some students were unavoidable and inherent to the test group. However, there were some instances when students got stuck on an activity either due to confusing instructions, or they simply couldn't produce the correct answer despite multiple attempts. There was also the potential for programming errors which registered correct answer as incorrect, though it

appears that no problems emerged during the intervention. Vanslambrouck (2018) categorizes such technology issues as costs within expectancy-value theory. In anticipation of these problems, the teacher researcher emphasized his availability and willingness to assist students with any issues they encountered, framing possible errors with the platform as a potential culprit. Several students reached out at some point during the intervention when they got stuck. The teacher researcher was able to resolve their problems, and they continued advancing without issue. Unfortunately, on occasions where students didn't ask for assistance, their continued participation was halted. This could be categorized as a technology cost, as distance learning proved to be a barrier for communication (Vanslambrouck et. al., 2018). It also illustrates the perils posed by relatively minor issues in either game instruction or programming. Errors and glitches can halt progression immediately, regardless of how motivating or engaging a learning tool is. This can be overcome by play testing, better in-game learner support such as constructive feedback, assistance after repeated failures, and easier access to reference materials. An open communication channel with the teacher is crucial to assist students with any issues they encounter.

## **5.2 Specific Objective 2: To analyze the motivational factors activated by the learning tool and their relationship with participation**

To keep this in perspective, this online learning platform didn't feature groundbreaking design or revolutionary gameplay. It was a soundly designed online language lesson populated by the standard activities one would expect to find on any online interactive learning platform, with a few added game elements and a task-based approach to organization and instruction. The game components, relevant materials, engaging activities, and meaningful context appeared to be highly motivating across cognitive, affective, and behavioristic factors (Schunk, 2020; Weiner, 2014; Roessger, 2012).

### **5.2.1 Cognitive Factors**

Cognitive factors examine motivation as an internal means-end analysis one uses when determining whether to engage in and/or persist in a behavior (Eccles and Wigfield, 2020). Perceived benefits or consequences of engaging / not engaging in an activity, or achieving / not achieving a goal, are weighted against the effort or opportunity costs of that activity or outcome (Schunk, 2020; Eccles and Wigfield, 2020). For the purpose of this study, this included interest in the platform as a study tool, and the goals presented by the platform.

#### **5.2.1.1 Interest**

Interest emerged as one of the most prevalent motivational factors according to both the Likert Scale and the thematic analysis. Interest, according to expectancy-value theory, refers to the perceived intrinsic value of engaging in an activity (Eccles and Wigfield, 2020). In this study, this was not focused on intrinsic interest in learning English, rather, interest in the game as a learning tool, which encompassed the perceived utility value and cost, as well as engaging gameplay and interesting context (Vanslambrouck et. al., 2018). Students felt the game was fun and didactic, while images and gifs from "The Simpsons" made the material and game objectives more relatable and meaningful to the students, which led to increased task-interest. According to social-cognitive theory, higher levels of enjoyment or interest are associated with higher levels of motivation (Kitsantas,

2020). Students also felt the platform featured relevant content and was well designed and useful for English learning. This is consistent with utility value in expectancy-value theory, in which activities that are perceived to be more useful are more motivating (Eccles and Wigfield, 2020). Utility and interest are counterbalanced by the costs associated with engaging in an activity. These include effort cost, opportunity cost, and psychological/emotional cost, as well as technology cost (Eccles and Wigfield, 2020; Vanslambrouck, et. al, 2018). The game was perceived to be fun and intuitive, which, coupled with the manageable time commitment, helped reduce the perceived emotional and opportunity cost of participation. In rare instances, students were unable to complete an activity after multiple attempts. This could be described as an effort cost when repeated attempts and failures discouraged the students from participating (Eccles and Wigfield, 2020). Failure to reach out for assistance could be categorized as a technology cost, as distance learning created a barrier of communication between the students and the teacher researcher (Vanslambrouck, et. al. 2018). Additionally, using “The Simpsons” or other intellectual property to provide context and generate interest limits pedagogical instruction to what currently exists (appropriate dialogs for listening comprehension, for example, can be difficult to find or may not exist). It also creates some potential legal/copyright issues if implemented at an institutional or program level. In an official implementation of quest-based learning, a meaningful story would have to come from another source.

#### **5.2.1.2 Goals**

Schunk (2020, p. 2) defines goals as “mental representations of what one is attempting to obtain” which “can energize and direct motivational outcomes”. In this study, goals from the cognitive perspective are of an internal origin. That is to say, their importance and relevance are contingent on students’ perceptions. The characteristics of these goals determine how much they contributed to motivation; goals are more highly motivating when they are clearly defined, rather than ambiguous, when they are more proximate, rather than further away, when they are achievable, and when they are challenging, rather than easy (Schunk, 2020). In this study, these consisted of learning goals and game objectives.

Student motivation likely benefited from the timeframe when the intervention took place, as the materials presented in the game aligned with their academic needs. The task-based nature of the game made learning goals clear and unambiguous. According to the social-cognitive perspective, clear goals are more highly motivating than ambiguous objectives (Zimmerman, 2015). The relative difficulty of these tasks was appropriate for the language level, meaning it was sufficiently challenging without being insurmountable. This is consistent with social-cognitive theory’s prediction that motivation is highest when activities present a moderate level of difficulty (Bandura, 1986). However, some students expressed that the materials and activities the game presented weren’t challenging or new, and they wished the game increased in difficulty as it progressed. Different abilities are to be expected in a language learning course. Fortunately, meaningful game objectives appeared to supplement motivational deficiencies in learning goals.

Game objectives of earning a treasure key and completing a quest served as a strong motivator as they provided short, clear, manageable goals with clear consequences (Sailer, et. al 2015), i.e. getting closer to completing the quest, and getting

closer to completing the game, respectively. This is consistent with social-cognitive theory's prediction that goals that are unambiguous, more immediately achievable and within a participant's abilities are associated with higher motivation (Schunk, 2020, Zimmerman, 2015). This suggests that the game benefited from multiple short learning paths within each quest, rather a single longer learning path. According to Weiner, (2014), persistent behavior in order to achieve a goal is reliant on the perceived consequences of attainment or non-attainment. In this context, finishing the game and reaching "Itchy and Scratchy Land" appeared to be meaningful in and of itself, at least for the duration of this intervention. It is possible, however, that the perceived value of attainment could be lower in an expanded version of a single quest if goals become too distant (Schunk, 2020), or if after multiple quests, students no longer perceive negative or positive consequences related to completing the quest / finishing the game. This could be addressed by expanding in-game rewards beyond the single lesson meta-quest.

Profile development and/or the use of avatars could address both interest in context and making game objectives more meaningful. Badges, trophies, rankings, points, items, etc. that a student earns and keeps for the duration of the semester could be displayed on their profile and/or expressed through avatars (Wood and Reiners, 2015). This could lead students to take intrinsic interest in strengthening their character/profile or engaging in narratives by completing game objectives, thus creating longer term consequences for achieving or failing to achieve goals (Weiner, 2014).

### **5.2.2 Autonomy**

Autonomy in this context refers to self-determination within a learning environment. In this study, autonomy can be examined at the activity level or at the game architecture level. Feelings of autonomy appeared to have been achieved at the activity level, as students' advancement within the game was contingent on completing activities correctly, which is in agreement with self-determination theory's prediction that self-determination is associated with higher intrinsic motivation (Ryan and Deci, 2000). At the game architecture level, the teacher researcher focused heavily on learner autonomy through the creation of student-centered learning paths and multiple equally challenging quests, as this is a cornerstone of quest-based learning (Haskell, 2013). While some students did occasionally take advantage of the separate learning paths, the tracking data and interview responses suggest that participants followed the game linearly in the order they were presented on the website deck.toys. A slide was created which outlined the target language for each learning path, but it was within the game instructions in the "Itchy and Scratchy Land" meta-quest. It wasn't integrated into the platform navigation nor was it easily referenced by students. This was a limitation on the platform, not an oversight by the teacher researcher. This could be improved if the quests were displayed in a non-linear fashion, along with the target language for each quest and learning path, thus allowing students to make informed choices when selecting learning paths.

### **5.2.3 Affective Factors**

Affective factors relate to the expectation of feelings and emotions one experiences when engaging in an activity (Weiner, 2014). Analysis of affective factors were drawn from attribution theory and social-cognitive theory. Feelings of competency, or self-efficacy in social-cognitive theory, refers to how a participant perceives their abilities while engaging in an activity (Weiner, 2005). Feelings of achievement is the sense of pride

derived from reaching a goal and is correlated with the level of difficulty or effort (Weiner, 2014). Finally, Sailer (2013) hypothesizes that activities which foster positive emotions are more motivating, while those that provoke negative feelings are demotivating learners (Sailer et. al., 2013).

#### **5.2.3.1 Feelings of Competency**

Students felt the game invoked feelings of competency, as the activities were fairly easy to complete successfully. It was appropriate for the English level, the required contents were provided, the activity instructions were clear, and there were few/no programming errors which inhibited advancement. This agrees with attribution theory, which holds that feeling of competency during failure/success states has 3 causal properties: location, stability, and controllability, and is maximized when success or failure is perceived to be internal, (caused by the participant's actions), unstable (changeable), and controllable (within the participant's control) (Weiner, 2005). Students' success or failure within the game was contingent on completing an activity correctly, and not subject to platform error, random chance, or automatic advancement, which made perceptions of success and failure states both internal and controllable (Weiner, 2005). Students also felt difficulty was appropriate for their English level, which made perceptions of success or failure states instable, as it was within their capacity to complete the activity successfully, yet still required some effort from students (Martin and Dowson, 2009). According to attribution theory and social-cognitive theory, successful performance leads to increased feelings of self-efficacy among students, which makes them more likely to engage in activities that are beneficial for learning (Schunk, 2020). This reflects the teacher researcher's pedagogical and motivational intention when designing this tool, to create a game that was accessible and playable for lower skilled learners, while also affording more advanced learners the opportunity for meaningful practice.

#### **5.2.3.2 Achievement**

Achievement relates to the feeling of pride of accomplishment after completing a task or reaching a goal and is correlated with the level of effort or difficulty (Weiner, 2014). The game prioritized fostering competency over presenting difficult challenges; however, due to its length, completing a quest and/or finishing the game required considerable time and effort on the students' behalf. This may have somewhat contributed to feelings of achievement after completing a game objective, as reflected in the Likert scale. This aligns with attribution theory, which holds that students are more likely to engage in activities with a high probability of success, which fosters feelings of pride, while avoiding activities with a risk of failure, which is associated with feelings of shame. Attribution theory predicts that when students attribute their success to internal factors, in this case effort, they experience higher levels of motivation and are more likely to persist in an activity (Weiner, 2014; Atkinson, 1957; Weiner, 2010).

#### **5.2.3.3 Emotions**

Emotion refers to the feelings evoked during gameplay, and included positive feelings like pleasure and enjoyment, and negative feelings like frustration, embarrassment, or anxiety (Astleiner, 2000). Overall, the students found the game to be enjoyable and engaging for a learning tool. They appreciated the light-hearted nature provided by gifs and images from "The Simpsons," and there weren't many instances of frustration or boredom. This aligns with Sailer's (2013) hypothesis that learners are more

likely to engage with activities that evoke positive emotions while avoiding those which evoke negative ones. It also agrees with attribution theory, which correlates positive and negative emotions with the persistence of behavior (Weiner, 2014; Atkinson, 1957).

#### **5.2.4 Behavioristic Factors**

Behavioristic factors derive from Skinner's (1963) operant conditioning, which works through a three-part contingency: stimulus-response-consequences, where consequences of a behavior determine its future likelihood of persisting (Roesger, 2012). Individuals repeat behaviors which result in a perceived positive outcome and refrain from those that result in a negative outcome (Chen, 2011). For the purposes of this study, these refer to game elements, which provided positive reinforcement through immediate feedback and rewards. Feedback and rewards aren't mutually exclusive; rather, they correspond to different reinforcement schedules (Schultz, 2015; Lim, 2020).

##### **5.2.4.1 Immediate Feedback**

Immediate feedback was provided by points and advancement after successfully completing each activity. Points were only awarded when the student completed the activity correctly on the first attempt. This mechanism provided positive reinforcement on a continuous schedule when students succeeded immediately, while withholding reinforcement when students didn't (Ferster and Skinner, 1957; McLeod, 2018). This dynamic incentivized sincere effort on the first attempt, rather than blind trial and error. Advancement was shown through progression on the quest map after successfully completing an activity, regardless of the number of attempts. This also provided positive reinforcement on continuous schedule, even when students didn't earn points (Lim, 2020). Advancement emerged as the more meaningful and persistent form of immediate feedback, as it ushered them closer to the end goal, and thus served longer term consequences (Chen, 2011). Points, meanwhile, offered no additional functionality within the game.

##### **5.2.4.2 Rewards**

Rewards, in this study, were administered upon completion of game objectives. Treasure keys were awarded at the end of each learning path and at the end of the quest. These were needed to finish the game. This corresponded to a fixed-ratio reinforcement schedule, where students were rewarded after completing a predetermined number of activities (Lim, 2020). Desire to finish the game emerged as the most relevant motivator among students who completed all the quests, followed by completing quest. Students expressed mostly indifference to the mid-quest treasure keys; however, based on the teacher researcher's experience playtesting the game, they served an important role of providing a reward after 15 to 20 minute chunks, rather than a single 45-minute learning path with no rewards. This would be consistent with operant conditioning, which finds that increasing the frequency of reinforcement on a fixed-ratio schedule accelerates the adoption of behavior (McLeod, 2018). The different reinforcement schedules of advancement/points, learning path keys, quest keys, and completing the game complimented each other by providing both short and long term rewards which kept students engaged. However, as stated with goals, the teacher researcher had some concerns about how persistent game elements would be motivating students over a longer period, as perceived negative and positive outcomes could lose their impact without greater consequences (Chen, 2011).

One possible solution would be the incorporation of currency and virtual goods. Students could earn virtual prizes which have either aesthetic or utility value through the completion of quests or acquire items from a virtual store with points they earned. This would provide a secondary reinforcer and expand the consequences of students' actions beyond a single quest, and incentivize participation over a longer period of time (McLeod, 2018; Chen, 2011).

### **5.3 Specific Object 3: To inquire on students' use of mobile devices to access the learning tool**

Mobile accessibility was explored as a means of increasing flexibility and reducing the barriers of entry for online study to students (Mianga, 2012). Responses to the interview and post-intervention questionnaire indicated that all but one participant didn't have issues with internet connectivity or access to technology at home. As these were graduate students, they likely didn't represent the same socioeconomic diversity as undergraduate students (Pumari, 2015). The game created for this intervention was also intended as a means to "meet students where they are", as the cell phones and tablets accounted for 59% of all web traffic in Chile in 2020 (Branch, 2021). Exit poll data revealed that mobile device use was comparably lower, with only 2 participants using a cell phone or tablet to study on the platform, comprising 13% of all completed coursework. These results, along with a few responses in the interview, suggest that some students limit academic study to computers and laptops as a learning strategy. Further inquiry into Chilean university students' study habits using mobile devices is needed to confirm or refute this observation. Despite the low numbers, the mobile-accessible platform did appear to increase flexibility for a few students. Furthermore, the small sample size, short time frame of the intervention, and the current global pandemic limited the opportunities for using mobile devices.

### **5.4 Limitations**

There were several limitations within this study that should be taken into consideration. The scope of the study was limited to one lesson with a duration of two weeks, so the long term effects of this implementation of quest-based learning weren't tested. It is unknown whether participation would have remained the same in a subsequent lesson and what motivation factors would have persisted, or if participation may have waned due to the novelty factor, as others researching quest-based learning have speculated (Snelson, 2021). The sample size was small, 8 participants, which limited the diversity of opinions and experiences with the game. Furthermore, the participants were not surveyed on their English study habits prior to the intervention, which limited the understanding of how this learning tool influenced their participation directly. They also didn't completely reflect the primary demographic of UdeC English Online. In addition to being volunteer participants willing to take on additional workload, these were also graduate students, who, in the teacher researcher's experience, tend to be more motivated by attainment and take academics and responsibilities more seriously than their undergraduate counterparts. Finally, this sample of graduate students didn't necessarily reflect the socio-economic diversity of the undergraduate student body, with fewer lower-income students who often have limited access to a computer at home.

The study was also planned within the context and according to the limitations of the global pandemic caused by COVID-19, where online study and social distancing practices were still widespread. However, these circumstances also limited the opportunities for mobile-accessible online study, as students were mostly at home with access to a computer during the intervention. Despite these limitations, the study still provided valuable insights into quest-based learning on adult learners, highlighting some of the benefits and alluding to possible improvements.

## **5.5 Implications**

The results of this action research project suggest that quest-based learning is an effective means of motivating adult EFL students in asynchronous online study. However, developing just a single lesson for a single level proved to be prohibitively time consuming for an individual teacher, and its implementation should therefore only be considered at a team, program or institutional level, with the intention of using the platform for multiple courses over several years. To this end, this study could be used as a reference to a team, program, or institutions considering developing an asynchronous quest-based language learning platform.

The possibilities of gamification are endless. As all contexts, students, and program objectives are different, it's not possible to prescribe which gamification elements to use in an online platform. Rather, teachers and designers should exercise personal judgement and consider their context, the target audience, their objectives and the tools available when selecting game components and functionality. Teachers should also keep the learner experience at the forefront when designing lessons and activities, so as to make playing a positive, engaging, and satisfying experience. In order to initiate participation, a requirement or graded assessment may be highly beneficial to entice students, and it's during the initial period of satisfying these objectives where the game-like experience can motivate students to participate further. Finally, participation on asynchronous platforms can be easily disrupted; minor flaws in the design, programming, and instruction can halt progression and participation. These can be mitigated by in-game learner support, playtesting and debugging, and an open channel of communication with the teacher.

# Chapter VI: Conclusions

## 6.1 Summary of Main Findings

The first specific objective explored the use of quest-based learning as a means of increasing asynchronous participation among EFL university students. The results suggest that the quest-based learning tool created for the purpose of this study was effective in increasing participation among students. This is evidenced by the 7 of the 8 participants meeting the participation requirement, 6 of 8 exceeding the requirement, and 4 of 8 completing the game in its entirety. High participation is likely attributed to 3 characteristics of the learning tool including: the use of game objectives, the methodology, and the content/context. Game objectives consisted of completing learning paths, completing quests and finishing the game. These were deemed as highly motivating by students who expressed a desire or need to finish the game and reach *Itchy and Scratchy Land*. The methodology refers to the structure and activities within the game, which students found to be “fun” and “didactic”. It was designed for students to learn and practice the target language incrementally and progress through the game with relative ease. The content and context, meanwhile, were relevant to the students’ learning needs and interests. The target language pertained to the English lesson during the time of the intervention and immediately preceded an oral evaluation. For context, “The Simpsons” aided in instruction through the use of pertinent visual aids and created an interesting narrative, even for those who weren’t fans of “The Simpsons.” These traits complimented each other in that the content was relevant to the students’ immediate academic needs; the methodology facilitated continued participation; and the game objectives created a long term interest in the game.

The second specific objective was to analyze 8 different motivational factors from 4 different perspectives. These were: the cognitive factors of interest and goals; autonomy; the affective factors of competency, achievement, and emotions; and the behavioristic factors of immediate feedback and rewards. *Interest* referred to the perceived value of the game as a learning tool (Eccles and Wigfield, 2020). Students found the materials, methodology, and context to be interesting, relevant, and useful for their language learning. This indicated a high perceived task value among students (Eccles and Wigfield, 2020). The game was perceived to be fun, intuitive, and time appropriate. This reduced the psychological, effort and opportunity costs of participating (Vanslambrouck et. al., 2018). *Goals* are the “mental representations of what one is attempting to obtain” (Schunk, 2020, p. 2). The materials presented within the game were in line with students’ learning goals, as they felt studying with the game would help them improve their grades (Schunk, 2020). The in-game objectives were perceived to be relevant, meaningful and clear, while also being achievable and proximate. These are all associated with higher levels of motivation (Bandura, 1986; Schunk, 2020).

*Autonomy* is intrinsically motivating according to Self Determination Theory (Ryan and Deci, 2000). The quests (4 independent quests containing 3 separate learning paths) and intervention (complete any 6 learning paths) were designed to maximize student choice within the game, which is a cornerstone of quest-based learning (Haskell, 2013). Some students mentioned utilizing the learning paths strategically by completing the path that was easier for them first. However, students mostly approached the game linearly, completing quests in the order they were presented. This can likely be attributed to the deck.toys navigation system, which presents maps from top to bottom on the side of a screen.

Affective factors correspond to the feelings and emotions students experience while playing the game. *Feelings of competency* describes how a participant perceived their abilities while engaging in an activity. This is highest when the level of difficulty is appropriate for the student (Bandura, 1986), and when the participant perceives to be in control of their success (Weiner, 2005). The game was perceived to be simultaneously effortful and easy, while also requiring students to perform well in order to advance (Schunk, 2020; Weiner, 2005). *Achievement* is the sense of pride of accomplishment one experiences after completing a task and is positively correlated with the level of difficulty and/or effort (Weiner, 2010). Although the game wasn't difficult, it did require considerable time and effort on the students' part, which may have contributed to feelings of achievement. Finally, *emotion* refers to the feelings that one experiences while engaging in an activity. Positive feelings are associated with higher levels of motivation, while negative feelings are associated with decreased motivation (Sailer et. al, 2015). Positive emotions like enjoyment and pleasure were achieved through interactive and didactic gameplay, and the use of "The Simpsons" for context. Negative emotions like boredom, frustration, and anxiety were diminished through the use of engaging activities with clear instructions, low levels of difficulty, and few technological errors.

Behavioristic factors derive from Skinner's (1963) operant conditioning, in which reinforcement is used to incentivize desired behavior through the use of gamification elements (Roessger, 2012). *Immediate feedback* was provided on a continuous reinforcement schedule through the use of points and advancement after successfully completing an activity (McLeod, 2018). Points were only awarded upon successful completion of an activity on the first attempt, which incentivized sincere effort and discouraged blind trial and error. Advancement along the quest map displayed students' progression towards an end goal, which motivated them to continue playing. *Rewards* were administered on a fixed-ratio reinforcement schedule in the form of treasure keys after successfully completing a learning path and after completing a quest (McLeod, 2018). Each successive treasure key brought students closer to finishing the game, which emerged as the primary motivating factor among those who completed all quests.

The third specific objective analyzed the use of mobile-accessible language learning as a means to increase flexibility and reduce barriers of access to asynchronous learning materials (Mianga, 2012). Use of mobile devices for asynchronous study was limited but significant, with 2 of the 8 participants utilizing a cell phone or tablet to access the tool, accounting for 13% of all completed coursework. It appears that the students who used mobile device in this intervention did so for convenience and comfort, rather than out of necessity. The test group consisted of graduate students, who likely didn't represent the same socio-economic diversity as the undergraduate student body (Pumari, 2015). Additionally, several comments from students indicated that they avoided using mobile device for study as part of their learning strategy.

## **6.2 Reflections**

It's worth noting that the research objective was defined first, then the game was conceptualized and created. Finally, the specific motivational factors were identified. During the development process, the teacher researcher used his experience and knowledge to create a game he felt would be engaging and motivating for students in order to maximize participation and achieve a positive result for this action research project. These included the use of a voice recorder tool which allowed students to practice

and check their pronunciation, and different “success” gifs and videos were shown after completing game objectives.

One reason why the teacher researcher didn’t identify motivational factors immediately was due to an error in the researching strategy while writing the initial project proposal. Often in second-language learning research, motivation is examined in terms of extrinsic and intrinsic factors, or in terms of instrumental and integrative factors. After completing this project, it is the opinion of the teacher researcher that these aren’t the most helpful or useful motivational constructs for classroom purposes, since they don’t directly address how the *quality of instruction* affects motivation.

Rather, social-cognitive theory’s postulation of task interest, self-efficacy, self-regulation, and goals (Schunk, 2020) could provide a more useful and specific framework to evaluate the motivational characteristics of an activity. Activities are more engaging when they are relevant and interesting for students. Tasks must be within their linguistic capabilities and not too complicated or demanding. Students also appear to persist in activities when there is a clear point of completion. These traits can provide insights into why an activity or lesson plan fails to engage students and point to possible improvements. Meanwhile, expectancy-value theory’s concept of task values and costs can be helpful when designing and implementing asynchronous learning activities. Increasing the perceived benefits or incentives while reducing the effort, time, and emotional costs can make asynchronous study more appealing and foster greater participation. This requires continued reflection on the students’ perceptions and experiences.

A final reflection is whether this learning tool falls under the definition of gamification or game-based learning. As stated previously, there are some ambiguities between the two, and an argument can be made for both. The teacher researcher had initially considered this as a gamified learning tool and developed the research instruments accordingly. The tool was designed as a cohesive standalone language lesson with added gamification elements. Target skills weren’t directly integrated into game mechanics (Findlay, 2016). The Likert scale scores and interview responses suggest students’ motivation was driven primarily by the language learning materials. This suggests that students saw value in it as a “real world” activity (Sailer, et. Al., 2017). By these metrics, the learning tool could fall under the definition of “gamification.” On the other hand, developing the learning tool was focused on creating engaging activities along scaffolded and achievable learning paths. This could be described as creating engaging gameplay (Plass, 2015). Furthermore, the learning tool presents a quantifiable outcome (Salen and Zimmerman, 2004): finishing the meta-quest and reaching Itchy and Scratchy Land. Completing the story was also a driver of students’ motivation and created a game-like experience. This implies that the conflict was to some extent artificial (Salen and Zimmerman, 2004). These characteristics align with game-based learning. Given the role that the activity design and game objectives played in shaping the learner experience, the teacher researcher would argue that the tool is indeed game-based learning. This is reflected in the number of times the learning tool is referred to as a “game” in the research paper.

### **6.3 Recommendations**

Creating the learning tool for this intervention required extensive planning, designing, trial and error, and reflection in order to produce something that the teacher researcher thought would be motivating and appealing to students. This was an a-linear

and time-consuming process. False-starts, missteps and dead-ends were frequent and unavoidable and should not be regarded as “mistakes” or “time wasted.” Creating this tool took more than 80 hours over several months to produce 3-5 hours of guided instruction. It would therefore be untenable to implemented by an individual teacher. Quest-based learning should only be considered at a team, program, or institutional level, with the intention of using the same tool for several years.

When creating an asynchronous learning environment, it is essential to keep the student experience as a central focus throughout the planning and development process. The challenge is to engage the student in a positive and reinforcing manner. It is important to keep in mind the clarity of instructions, the amount of information provided, and the appropriate amount of time to ensure continued interest and engagement with asynchronous tools and materials.

The game succeeded in motivating students during the intervention period. However, the teacher researcher is somewhat doubtful this would persist over a longer time period across multiple lessons, as the game objectives may become less meaningful as the novelty wears off. Additional components like profile development, virtual currency, and/or a graded element could create longer-term consequences that would motivate students to continue participating throughout the semester.

The results of this study speak to the importance of three crucial elements in activity design to foster participation including: relevant content, scaffolded methodology, and game objectives. While methodology and content are codified into best practices of second language instruction, the presence of a final objective and a point of completion emerged as an X factor in motivating students. This suggests that designing an activity around completing a final objective is a highly effective means of increasing motivation, and should be included when possible, both in synchronous and asynchronous settings.

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# Appendices

## Appendix A: Software Tracking

# Classroom Report

Deck.toys features a built-in tracking tool to monitor students' progress and performance / responses.

First, access the classroom for the research group and click on "View Classroom Report."

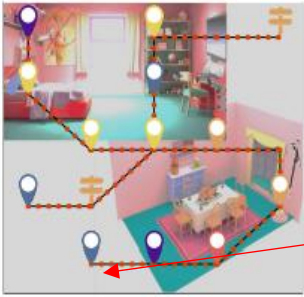
Select one of the quests. (Bart's Evening At Home shown here) and click on one of the three activities with the "trophy" icon to view the classroom report. (Speaking and Writing 2).

Students' initials that completed the slide / activity are displayed.

Locate the slide where the treasure key was rewarded and mark which students completed and received a treasure key (each student and learning path had their own row and column, respectively).


Repeat for all 12 treasure keys.

3/7/2021  
Daily Activities - Bart's Evening at Home



Writing and speaking 2  
Completed : 8  
De Ad LP RA BA AS MV CC


Slide 1 0 / 0



Put the sentence together. Look at the pictures, drag and drop the words into the correct order, then record your answers. (IMPORTANT:

Voice: 8

Slide 8 0 / 0



Congratulations! Use this trophy to open Bart's door to reach the final activity. Utiliza este trofeo para abrir la puerta de Bart por la actividad final.

Treasure Key: 8  
Bart's Skateboard  
DeLPAdMVRABAASCC

	A	B	C	D	E	F	G	H	I	J	K	L	M	N	O	P	Q	R	
		Itchy and Strachy Land (door keys)				Homer		Marge				Lisa		Bart					
	Name	Homer	Marge	Lisa	Bart	Vocab	Grammar	Final	Vocab	Grammar	Final	Vocab	Grammar	Final	Vocab	Grammar	Final	TOTAL	% Comp
1	Student 1																	7	
2	Student 2	y	y	y	y	x	x	x	x	x	x	x	x	x	x	x	x	12	
3	Student 3	y	y	y	y	x	x	x	x	x	x	x	x	x	x	x	x	12	
4	Student 4																	4	
5	Student 5	y	y	y	y	x	x	x	x	x	x	x	x	x	x	x	x	12	
6	Student 6	y	y	y	y	x	x	x	x	x	x	x	x	x	x	x	x	12	
7	Student 7																	6	
8	Student 8			y	y	x	x		x	x	x	x	x	x	x	x	x	11	

## Appendix B: Exit Polls

Exit polls administered at the end of each learning path on deck.toys using a built-in “multiple choice question” app, displayed below. Students’ responses were automatically logged in the Classroom Report.

290 David Test Class

Writing and speaking 2

Por favor toma un momento para cumplir la siguiente encuesta acerca de sus percepciones de este actividad. Selecciona la mayor opción.

1. Para cumplir esta actividad usé un:
2. Este juego es entretenido.
3. Al realizar el juego, aumentó mi conocimiento del inglés
4. Me siento orgulloso de mi desempeño en esta actividad.
5. El juego me motiva a seguir jugando.

1. Para cumplir este actividad, usé un...

aparato movil

Desktop/laptop

Ambos

Submit

Responses were accessed using the same procedure as participation data (see Appendix A), and coded numerically 1 (mobile device), 2 (desktop/laptop), and 3 (both).

A	AU	AV	AW	AX	AY	AZ	BA	BB	BC	BD	BE	BF	BG	BH	BI	
	Bart's Evening Vocabulary Section						Bart's Evening Grammar Section					Bart's Evening Final				
Name	Device	Entert	Increa	Produ	Want	Device	Entert	Increa	Produ	Want	Device	Entert	Increa	Produ	Want	
Student 1	1	5	4	5	4	1	4	4	4	4	1	5	4	5	4	
Student 2	2	4	5	4	5	2	4	5	4	5	2	4	5	5	5	
Student 3	2	4	3	3	4	2	5	4	4	4	2	4	3	3	4	
Student 4	2	4	5	5	5	2	5	5	5	5	2	5	5	5	5	
Student 5	2	5	5	5	5	2	4	5	5	5	2	5	5	5	5	
Student 6	2	4	3	4	4	2	4	4	4	3	2	3	4	4	3	
Student 7	2	5	4	4	5	2	5	5	4	5	2	5	4	4	5	
Student 8	2	3	3	3	4	2	3	4	3	3	2	3	3	3	3	

A brief Likert scale pertaining to motivational factors was also included in the exit polls, but was not used in this study.

## Appendix C: Post-Intervention Questionnaire

NOTE: Participants' responses to items 1 and 2 contradicted exit poll data and interview responses, so they were discarded. Items 4 and 5 weren't deemed relevant to the findings of the study, as they didn't influence participation.

Indica su edad: \_\_\_\_\_

Indica su género:

Masculino    Femenino    No binario

Por favor, responda las siguientes preguntas acerca del uso de aparatos móviles como herramienta de estudio.

1. De todo el trabajo que realizaste en esta actividad, ¿cuánto cumpliste usando un aparato móvil?

todo/casi todo (>90%)	Más que la mitad (75%)	Aproximadamente la mitad (50%)	Menos que la mitad (25%)	Casi nada (<10%)
-----------------------	------------------------	--------------------------------	--------------------------	------------------

2. Considerando todos mis cursos universitarios, utilizo un aparato móvil para estudiar...

todo/casi todo (>90%)	Más que la mitad (75%)	Aproximadamente la mitad (50%)	Menos que la mitad (25%)	Casi nada (<10%)
-----------------------	------------------------	--------------------------------	--------------------------	------------------

3. Tengo acceso a un computador/notebook e internet para realizar tareas / estudiar...

Siempre/casi siempre (>90%)	La mayoría del tiempo (75%)	La mitad del tiempo (50%)	Menos que la mitad del tiempo (25%)	Nunca/casi nunca (<10%)	Prefiero no contestar
-----------------------------	-----------------------------	---------------------------	-------------------------------------	-------------------------	-----------------------

Por favor lee los siguientes afirmaciones y selecciona la opción que mejor refleja tu opinión acerca de la funcionalidad del sitio deck.toys

4. La página deck.toys era cómoda de usar en el formato móvil.

Muy de acuerdo	De acuerdo	En desacuerdo	Muy en desacuerdo	No acedaba a deck.toys usando aparato móvil.
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5. La página deck.toys era cómoda de usar en el formato computador/notebook.

Muy de acuerdo	De acuerdo	En desacuerdo	Muy en desacuerdo	No acedaba a deck.toys usando aparato móvil.
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## Appendix D: Likert Scale

### Factores Cognitivos de la Motivación

Por favor lee las siguientes afirmaciones y selecciona la opción que mejor refleja tu opinión acerca del juego "Itchy and Scratchy Land."

1. El contenido lingüístico era relevante para mi aprendizaje.

Muy de acuerdo (5)	De acuerdo (4)	Ni en acuerdo ni desacuerdo (3)	En desacuerdo (2)	Muy en desacuerdo (1)
--------------------	----------------	---------------------------------	-------------------	-----------------------

2. El contexto en que se presentó el contenido era interesante para mí.

Muy de acuerdo (5)	De acuerdo (4)	Ni en acuerdo ni desacuerdo (3)	En desacuerdo (2)	Muy en desacuerdo (1)
--------------------	----------------	---------------------------------	-------------------	-----------------------

3. El juego aumentó mi interés en aprender inglés.

Muy de acuerdo (5)	De acuerdo (4)	Ni en acuerdo ni desacuerdo (3)	En desacuerdo (2)	Muy en desacuerdo (1)
--------------------	----------------	---------------------------------	-------------------	-----------------------

4. Comparado con otros recursos para estudiar inglés, el juego me permitía un uso efectivo de mi tiempo.

Muy de acuerdo (5)	De acuerdo (4)	Ni en acuerdo ni desacuerdo (3)	En desacuerdo (2)	Muy en desacuerdo (1)
--------------------	----------------	---------------------------------	-------------------	-----------------------

5. El juego presentó metas relevantes para mi aprendizaje.

Muy de acuerdo (5)	De acuerdo (4)	Ni en acuerdo ni desacuerdo (3)	En desacuerdo (2)	Muy en desacuerdo (1)
--------------------	----------------	---------------------------------	-------------------	-----------------------

6. Sentí que el juego me ayudará obtener una mejor nota en inglés.

Muy de acuerdo (5)	De acuerdo (4)	Ni en acuerdo ni desacuerdo (3)	En desacuerdo (2)	Muy en desacuerdo (1)
--------------------	----------------	---------------------------------	-------------------	-----------------------

7. Sentí que el juego me ayudó a mejorar mi competencia comunicativa.

Muy de acuerdo (5)	De acuerdo (4)	Ni en acuerdo ni desacuerdo (3)	En desacuerdo (2)	Muy en desacuerdo (1)
--------------------	----------------	---------------------------------	-------------------	-----------------------

8. En el juego, podía tomar control de mi propio aprendizaje.

Muy de acuerdo (5)	De acuerdo (4)	Ni en acuerdo ni desacuerdo (3)	En desacuerdo (2)	Muy en desacuerdo (1)
--------------------	----------------	---------------------------------	-------------------	-----------------------

### Factores Afectivos de la Motivación

Por favor lee las siguientes afirmaciones y selecciona la opción que mejor refleja tu opinión acerca del juego "Itchy and Scratchy Land."

9. El juego era apto para mi nivel de inglés.

Muy de acuerdo (5)	De acuerdo (4)	Ni en acuerdo ni desacuerdo (3)	En desacuerdo (2)	Muy en desacuerdo (1)
--------------------	----------------	---------------------------------	-------------------	-----------------------

10. La plataforma me dio todo lo que necesitaba para realizar el juego.

Muy de acuerdo (5)	De acuerdo (4)	Ni en acuerdo ni desacuerdo (3)	En desacuerdo (2)	Muy en desacuerdo (1)
--------------------	----------------	---------------------------------	-------------------	-----------------------

11. Me sentía competente mientras realizaba el juego.

Muy de acuerdo (5)	De acuerdo (4)	Ni en acuerdo ni desacuerdo (3)	En desacuerdo (2)	Muy en desacuerdo (1)
--------------------	----------------	---------------------------------	-------------------	-----------------------

12. El juego era desafiante para mí.

Muy de acuerdo (5)	De acuerdo (4)	Ni en acuerdo ni desacuerdo (3)	En desacuerdo (2)	Muy en desacuerdo (1)
--------------------	----------------	---------------------------------	-------------------	-----------------------

13. Me sentí orgulloso después de lograr una meta.

Muy de acuerdo (5)	De acuerdo (4)	Ni en acuerdo ni desacuerdo (3)	En desacuerdo (2)	Muy en desacuerdo (1)
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14. El juego era entretenido.

Muy de acuerdo (5)	De acuerdo (4)	Ni en acuerdo ni desacuerdo (3)	En desacuerdo (2)	Muy en desacuerdo (1)
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15. El juego me provocaba emociones positivas, como alegría, felicidad, y/o placer.

Muy de acuerdo (5)	De acuerdo (4)	Ni en acuerdo ni desacuerdo (3)	En desacuerdo (2)	Muy en desacuerdo (1)
--------------------	----------------	---------------------------------	-------------------	-----------------------

16. El juego me provocaba emociones negativas, como frustración, vergüenza, y/o ansiedad.

Muy de acuerdo (1)	De acuerdo (2)	Ni en acuerdo ni desacuerdo (3)	En desacuerdo (4)	Muy en desacuerdo (5)
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Factores Conductistas de la Motivación

Por favor lee las siguientes afirmaciones y selecciona la opción que mejor refleja tu opinión acerca del juego "Itchy and Scratchy Land."

17. Ganar puntos en el juego era motivante.

Muy de acuerdo (5)	De acuerdo (4)	Ni en acuerdo ni desacuerdo (3)	En desacuerdo (2)	Muy en desacuerdo (1)
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18. El sistema de llaves de tesoro era motivante.

Muy de acuerdo (5)	De acuerdo (4)	Ni en acuerdo ni desacuerdo (3)	En desacuerdo (2)	Muy en desacuerdo (1)
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19. Después de empezar una quest, me motivaba terminarla.

Muy de acuerdo (5)	De acuerdo (4)	Ni en acuerdo ni desacuerdo (3)	En desacuerdo (2)	Muy en desacuerdo (1)
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20. Me motivaba terminar el juego y llegar a Itchy and Scratchy Land.

Muy de acuerdo (5)	De acuerdo (4)	Ni en acuerdo ni desacuerdo (3)	En desacuerdo (2)	Muy en desacuerdo (1)
--------------------	----------------	---------------------------------	-------------------	-----------------------

21. El juego provee retroalimentación estimulante.

Muy de acuerdo (5)	De acuerdo (4)	Ni en acuerdo ni desacuerdo (3)	En desacuerdo (2)	Muy en desacuerdo (1)
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### Appendix E: Semi-structured Interview

Game Element	Motivational factors <u>Category</u> -subcategory	Suggested Questions
Meaningful story	<u>Affective</u> -Emotions  <u>Cognitive</u> -Interest	1. ¿Qué te pareció el juego? - ( <i>¿Disfrutaste hacer la actividad?</i> ) - <i>Hubo algo bueno/malo (sentimiento contradictorio de la respuesta previa) de tu experiencia?</i> 2. ¿Qué te pareció el contexto de la actividad? - <i>¿Era personalmente relevante?</i> - <i>¿Se influía en tu participación?</i>
Quests:	<u>Affective</u> -Competency <u>Cognitive</u> -Interest  -Goals  <u>Affective</u> -Achievement <u>Cognitive</u> -interest	3. ¿Cuáles mapas/quests hiciste? 4. ¿Qué te pareció el diseño y formato de las quests? - <i>¿Cómo era la dificultad?</i> 5. ¿Qué te pareció el contenido de las quests? - <i>¿Era relevante / útil?</i> 6. ¿Qué te pareció la actividad final? - <i>¿Piensas que realizar la quest te preparó adecuadamente para la tarea final?</i> - <i>¿Te servía para tus metas? Explica porque?</i> 7. ¿Cómo te sentías después de cumplir la quest? - <i>¿Te dio ganas de seguir jugando? ¿Porque / no?</i> - <i>¿Cumpliste los 4 quests? (¿Porque no?)</i> 8. ¿Valía la pena este juego como método de estudio?
Progress bars	<u>Behavioristic,</u> -Feedback	7. ¿Cómo fue indicado tu avance en la plataforma? - <i>¿Cómo encontraste el sistema del avance?</i> - <i>¿Te sirvió algo?</i>
Treasure Keys / trophies	<u>Behavioristic</u> -Rewards	9. ¿Cómo te sentías cuando ganaste una llave? - <i>¿Era importante o relevante para ti, o te dio lo mismo?.</i>
Points	<u>Behavioristic</u> -Rewards -Feedback	10. ¿Qué te pareció el sistema de los puntos? - <i>¿Lo encontraste relevante?</i> - <i>¿Te motivaba ganar puntos?</i> - <i>¿Cómo sentías cuando no ganaste puntos?</i>
Use of mobile devices		11. ¿Usaste tu aparato móvil para acceder la plataforma? ¿Cómo fue tu experiencia? 12. ¿Cómo describirías tu acceso a un computador o laptop con internet?

Final thoughts		<p>13. ¿Qué te gustó más del juego? ¿Te gustaría si la plataforma UdeC English Online tuviera esta estructura? ¿Qué sugerías para mejorarlo?</p> <p>14. ¿Tienes algún otro comentario adicional o consultas?</p>
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