

MA in Technology-Mediated Language Teaching and Learning

**Gamifying 7th Grade EFL Classes
Through Digital Quest-Based Learning
Environments to Enhance 4Cs Skills.**

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Abstract

The aim of this proposal is to investigate how effective digital quest-based learning environments are in promoting the 4Cs skills (communication, critical thinking, collaboration and creativity) in 7th grade students learning English as a Foreign Language (EFL). The primary objective is to target effective methods to use digital quests to improve the previously mentioned skills, and to provide teachers with practical insights and strategies to overcome and mitigate challenges that could be found when integrating this approach into their teaching practices. The methodology involves the application of a quest-based learning environment in a secondary school in Las Rozas, Madrid, aimed at 12-13 year-old students with A2 level English proficiency. The proposal takes advantage of the school's digital facilities to create an engaging and interactive learning experience. The anticipated outcomes suggest significant improvements in fostering students' motivation and promotion of the 4Cs skills. The proposal concludes that digital quest-based learning environments are valuable tools for English as a Foreign Language teachers, offering a practical and real framework that allows the integration of digital literacy and the 21st century skills into language teaching and learning. Key recommendations include the need for constant updates and adaptation of digital tools to meet the ever-evolving needs of students and the educational system.

Key words: Digital Quest-Based Learning, 4Cs Skills, English as a Foreign Language (EFL), Digital Literacy.

Resumen

El objetivo de esta propuesta es investigar la efectividad de los entornos de aprendizaje digitales basados en misiones, con el fin de fomentar las habilidades 4Cs (comunicación, pensamiento crítico, colaboración y creatividad) en estudiantes de primer curso de educación secundaria obligatoria que estudian inglés como lengua extranjera. El objetivo principal es encontrar métodos efectivos con los que poner en práctica el aprendizaje basado en misiones digitales, con el fin de mejorar las habilidades mencionadas anteriormente y proporcionar a los docentes ideas y estrategias prácticas para mitigar y enfrentarse a los desafíos que podrían encontrarse al integrar este enfoque en sus prácticas docentes. La metodología implica la puesta en práctica de un entorno de aprendizaje basado en misiones en un centro de secundaria en Las Rozas, Madrid, dirigido a estudiantes de 12-13 años con un nivel de inglés A2. La propuesta aprovecha las instalaciones digitales del centro para crear una

experiencia de aprendizaje motivadora e interactiva. Los resultados previstos sugieren mejoras significativas en el aumento de la motivación de los estudiantes y el fomento de las habilidades 4Cs. La propuesta concluye que los entornos de aprendizaje digitales basados en misiones son herramientas valiosas para los profesores de inglés como lengua extranjera, ya que ofrecen un marco práctico y real que permite la integración de la digitalización y las habilidades del siglo XXI en la enseñanza y el aprendizaje de lenguas. Las recomendaciones clave incluyen la necesidad de una actualización y adaptación constante de las herramientas digitales para satisfacer las necesidades en constante evolución de los estudiantes y del sistema educativo.

Palabras clave: Aprendizaje basado en misiones digitales, Habilidades 4Cs, Inglés como lengua extranjera (EFL), Digitalización.

INTRODUCTION

Nowadays, we are witnessing a rapidly changing educational scenery, where integrating new technologies and innovative teaching methodologies is crucial in order to equip students with the necessary skills to succeed in the 21st century. This proposal aims to create a digital quest-based learning environment whose goal is to enhance the 4Cs skills -communication, collaboration, critical thinking and creativity- in the context of an English as a Foreign Language (EFL) classroom, by incorporating gamification into the subject's curriculum. The primary objective of this thesis is to provide teachers with practical insights and suggestions to leverage digital quest-based learning environments in order to boost the 4Cs development and acquisition within EFL environments. The specific objectives set include the acquisition and development of communicative functions, vocabulary, language structures and basic conventions and strategies for written and oral interaction in secondary education students.

Traditional classrooms' dynamics usually fail to completely engage students, something that can delay or interfere with their ability to develop essential skills needed in the 21st century. In the attempt to tackle this issue, this thesis seeks to examine the potential of quest-based learning environments to convert the learning process into a more engaging, interactive and effective space. The significance of the proposal lies in its potentiality to improve and increase students' motivation, engagement and accomplishment of the learning outcomes through a gamified approach that combines both intrinsic and extrinsic motivational gamified elements.

From a theoretical point of view, this study contributes to the existing framework of knowledge about gamification and its implementation in educational contexts. From a practical perspective, it offers a roadmap for teachers to apply quest-based learning environments, anticipating the challenges they may encounter and providing strategies to minimize or overcome them. Ultimately, it intends to enhance the quality of EFL learning and teaching processes and better prepare students for future academic and professional challenges.

1. THEORETICAL FRAMEWORK

1.1 Language Teaching and Learning in the 21st Century: 4 Cs.

In a world in continuous change where learning never ceases, a unified vision for learning is necessary. With this aim, in 2002, the non-profit organization Partnership for 21st Century Skills (Plucker, Kaufman & Beghetto, 2016) identified the key skills that will pave the way for 21st century learners: communication, collaboration, critical thinking and creativity, known as the 4Cs. These skills, which are reshaping education worldwide, have a clear impact on language teaching and learning and their application and enhancement in language classrooms is one of the main challenges posed for the language teaching and learning community (Halvorsen, 2018). These skills can be explained as follows:

- Critical Thinking is one of the most valuable skills that our students will need to succeed in the future; being able to analyze problems, keeping an open mind and considering different perspectives before finding a solution (Halvorsen, 2018). The development of this competence can be easily done in a language learning environment by doing research on a topic, engaging in debates and expressing oral and written opinions.
- Creativity can be promoted by introducing a wide range of activities and tasks that suit different learners' profiles. Students are posed with problems which they try to solve from different perspectives and in creative ways, which, in some cases, can lead to innovation (Halvorsen, 2018).
- Collaboration addresses working creatively with others, developing, implementing and communicating opinions and ideas (Plucker, Kaufman & Beghetto, 2016). Collaboration is easy to incorporate in a language learning environment, through peer and cooperative work.
- Communication, the prime aim of language learning, involves conveying ideas effectively with confidence, to avoid confusion and misunderstanding (Halvorsen, 2018).

According to Halvorsen (2018), all these four competences are mixing with digital literacies inside and outside the classroom. Indeed, it is a reality that instruction and interaction already take place through digital devices, but students cannot be expected to acquire and develop digital skills on their own, even if they seem to master playing video games or updating their social media profiles. It is our duty as teachers to

provide them with the necessary skills to search, select and analyze online information critically, and to professionally use the right tools for each task they are to perform. Therefore, it is crucial for English language learning environments to not only enhance the different language skills, but also promote collaboration through group work and integrate digital literacy. English teachers can effectively blend and promote language skills, 21st competences and digital competence by using active learning methodologies in which students engage in tasks where they face new challenges and solve problems while acquiring the learning objectives set (Romero et al., 2015). A good case in point is gamification.

In conclusion, the current society demands a holistic approach to education that goes beyond traditional language learning approaches and needs a unified vision to promote the four necessary skills to succeed in an ever-evolving world: communication, collaboration, critical thinking and creativity. These skills, together with the integration of digital literacy, demand remodeling language teaching and learning processes, something that teachers can do through active learning methodologies such as gamification, to ensure that students are granted with the necessary skills for success in the 21st century.

1.2 Gamification.

In recent years, there has been a growing tendency to introduce gamifying experiences in many fields, and the area of foreign language teaching has not been an exception. In the attempt to construct what gamification is, many definitions are found. Deterding et al. (2011) define gamification as “the use of game design elements into non-game contexts” (p.9). The term element indicates that gamified experiences do not use fully developed games, they only incorporate certain elements of games. Therefore, Deterding et al. (2011) suggest limiting gamification to the description of elements usually found in games and associated with games. On his part, Marczewski (2013) defines gamification as the “application of gaming metaphors to real-life tasks to influence behavior, improve motivation and enhance engagement” (p. 4). Applying it to the educational field, Dichev & Dicheva (2017) state that gamification in education refers to the “introduction of game design elements and gameful experiences in the design of learning processes” (p. 2). The main reason for introducing these game-like elements in teaching practices is the belief that they increase learning productivity and engagement and create a positive behavior (Aguilar et al., 2018). Another of the major benefits of gamification is that they shift away from learning models based on

information delivery towards problem-solving and collaborative models, which foster critical thinking (Kingsley and Grabner-Hagen, 2015).

We shall now tackle what is needed in order to create gamified experiences in the classroom. Werbach and Hunter (2015) illustrate game design elements as a pyramidal hierarchy consisting of three layers: dynamics, mechanics and components. At the top of the pyramid are game dynamics, the most high-level conceptual elements in a gamified system. Werbach and Hunter (2015) consider them the hidden structure that makes the experience coherent and provide the game's frame. Among the most important dynamics that every game developer should consider are constraints, which are present in basically all games by introducing choices that limit the players' freedom, and emotions produced by the game: from joy to anger or even sadness; these emotions can enrich the experience, creating a sense of accomplishment, inviting people to play more. Another very important dynamic to consider is the narrative, the element that puts all the pieces of the game together. The narrative can be shown explicitly, through a storyline, or implicitly, but it is essential to have one, otherwise, the gamified experience can become a bunch of abstract things with no flow, reducing thus the effectiveness and purpose of gamification. Progression is also an important element that is usually present in gamified systems, giving players the opportunity to move from the start point and to have a feeling of progression, instead of keeping doing the same thing repeatedly without a purpose. Finally, relationships, having people interacting with teammates or rivals, are a crucial point to experiencing the game.



Figure 1. The hierarchy of game elements (Werbach & Hunter, 2015).

Following Werbach and Hunter's pyramid (2015), at the next level we find the game mechanics. These could be classified as the elements that move the action forward.

There is not a specific, closed list of games mechanics, but these are some of the most recurrent: challenges (games must set some objective to be reached), chance (games always involve some random mechanics, like throwing a dice, which does not entirely depend on the players' action). Cooperation and competition are also valuable mechanics, providing the game with a sense of losing and winning. Feedback is a key mechanics element, it is important that players are informed about their performance live, because that will foster their desire to keep going. Turns and win states are usually recurrent game mechanics, too.

Finally, as shown in Figure 1, at the bottom of the pyramid are components, the concrete part of games responsible for gamifying the environment and achieving goals. Components are considered the most surface level of the game, what the players usually see, in other words, they are the specific ways to visually represent dynamics and mechanics' purposes. The most used are rewards after completing a task, avatars representing the player, and badges (visual representations of achievements). Leaderboards, levels, points and virtual currency are other highly used game components. As shown in the pyramid structure, there are fewer dynamics than components, being these lower-level examples the ways to represent the higher-level elements.

Based on the higher and lower game elements chosen and applied, two types of gamification are distinguished: reward-based gamification and meaningful gamification (Katrin and Nicholson, 2016). Reward-based involves the use of external rewards to modify students' behavior through extrinsic motivation. The most common rewards are some of the components previously mentioned: badges, levels, leaderboards, points or digital currency and avatars. Reward-based gamification has immediate effects and is therefore suitable for teaching new skills or completing tasks for which users do not have internal motivation (Nicholson, 2015). On the other hand, meaningful gamification aims to engage users by increasing their intrinsic motivation instead of using just external rewards (Nicholson, 2015).

However, not everything is black or white, and the truth is that both extrinsic and intrinsic motivation have their role in gamification, and that is what Andrzej Marczewski (2022) aims to convey with his concept of RAMP to fun. RAMP stands for Relatedness, Autonomy, Mastery and Purpose. Relatedness refers to the desire to be connected to others. Taking it to a gamified environment, it would cover aspects such as social status or a feeling of belonging to a community. According to Marczewski (2022), this is one of the glues that hold and elevate the gamified system: if you

have a community that enjoys interaction, motivation and engagement will persist. Autonomy is understood as freedom; giving users a level of autonomy will make them feel they are in control of what they are doing, without freedom there is no creativity. Mastery refers to the process of developing skills at something. In a gamified environment, skills increase in direct proportion to the level of the challenge, something frequently found in video games: the game gets more difficult as you get better at it. Finally, purpose can be understood as the need for meaning in our actions; in a gamified learning environment, two main purposes can be found: the desire to help others, cooperating towards a common goal and also the need to understand why you do things. According to Marczewski (2022), a good gamified environment will have one or more of these intrinsic motivators, which together with extrinsic rewards, will create a good combination to reinforce and support motivation and meaningful learning. If we go back to the gamification pyramid, that is how the structure fits together and how the purpose of gamification is accomplished, in the combination of extrinsic and intrinsic factors which contribute to enhancing the learning process.

In summary, the integration of gamification is gaining more and more popularity in our classrooms, offering a myriad of benefits for our students' learning process, such as increasing productivity, engagement and critical thinking skills. Werbach and Hunter's framework (2015) outlines the hierarchical structure that must be taken into account to create an effective game-based learning experience. Depending on the elements included, two main types of gamification are distinguished: reward-based, which uses external rewards for motivation, and meaningful gamification, which focuses on intrinsic motivators such as relatedness, autonomy, mastery and purpose. By combining both extrinsic and intrinsic motivators, gamification intends to enrich the learning process and create engaging educational experiences.

1.3 Gamification Learning Framework.

Before choosing a learning framework to design our gamified experience, it is important to bear in mind that all frameworks proposed share similar features and while they can be a good starting point to sketch and plan a gamified class, they are not rigid, and can be adapted and changed according to the learning objectives and needs (Damevska, n d). The learning framework chosen for this quest-based learning environment will focus on the Learner-centered Gamification Design Framework (LEGA) proposed by Baldeón, Rodríguez and Puig (2016). Among its main features, it must be highlighted that LEGA is student-centered and aligns the gamified tasks with the learning objectives and outcomes. It consists of five stages in which learning and

gamification are assessed and modified or improved if considered necessary. The creation and implementation of the intended quest-based learning environment will be based on the following stages:

1. Defining learning objectives and outcomes to be gamified and how will students benefit from this gamification process.
2. Knowing the students' profile, characteristics and context in order to choose the most appropriate gamification mechanics.
3. Designing gamified learning tasks and their corresponding assessment.
4. Deploying and performing fun and engaging learning sessions, choosing the most appropriate dynamics, mechanics and components, finding a balance between extrinsic and intrinsic motivation and the difficulty of the tasks.
5. Assessing learning and gamification to improve/modify the initial design.

The steps above described by LEGA (Baldeón, Rodríguez and Puig, 2016) will be implemented in the form of a gamified quest, an approach combining elements of gamification with the structure and principles of quest-based learning, to create an engaging and immersive learning experience.

1.4 Quest-Based Learning.

Quests are one of the main components of gamification, their use in educational settings is referred to as digital quest-based learning (Haskell, 2013). Despite its brief and limited history (Snelson, 2022), digital quest-based learning could be defined as an instructional design theory that uses game-mechanics and gamer-like learning environments to support students' learning process within the curriculum (Haskell, 2013). In digital quest-based learning, students engage in quests which, resembling typical school assignments, incorporate different formats: text, audio, media and have a culmination activity such as speech, presentation, paper or another practical artifact (Haskell, 2013). According to Villagrasa et al. (2014), within the classroom context, a digital quest is virtually any task that involves solving problems to reach a final, tangible goal; it could simply be a collaborative class project. On his part, Werbach and Hunter (2020) claim that the basic format of a digital quest based learning environment includes a storyline, a goal and a reward for completion. However, just like all class assignments are not the same, quests are not all the same; their format may vary depending on the action they demand or the purpose they set to advance in the gamified experience (Snelson, 2022).

Some of the game-mechanics usually present on digital quest-based learning approaches are points and scores provided after completing tasks or achieving specific learning objectives within the quests. Virtual rewards such as badges and achievements are usually found and given to learners for completing quests or missions within it. Digital Quest-based Learning also incorporates levels to show students' progress as they accumulate points while completing steps or missions. Leaderboards are another recurrent element in quests, letting students compare their performance with peers. These game-mechanics elements serve as a form of motivation, positive reinforcement and create a feeling of achievement and progression.

Apart from game-mechanics, Haskell (2013) and Werbach and Hunter (2020) claim that gamer-like learning environments are important to set the quest's appropriate atmosphere, achievable through the inclusion of narrative and storylines, which contextualize the learning tasks and immerse learners in the thematic setting. The storylines simulate real-like scenarios and situations where learners are to apply their knowledge and skills to solve problems or achieve goals, developing problem-solving and critical-thinking skills. Another feature of gamer-like learning environments present in quests is feedback provision and progress tracking. This mechanism guides learners through the process, highlighting achievement and areas for improvement. Finally, one of the most important gamer-like elements present in quests is the sense of community and collaboration among learners, enhancing teamwork, peer interaction and sharing of knowledge and ideas. By incorporating these game mechanics and gamer-like learning environments, quest-based learning transforms the traditional classroom dynamics into a more engaging and creative space where learners are motivated to explore, take risks and learn (Haskell, 2013).

In summary, digital quest-based learning, a component of gamification, makes use of game mechanics and gamer-like environments to enhance educational experiences, immersing learners in themed contexts, fostering a sense of accomplishment, progress and growth while boosting problem-solving and critical thinking. The structure of gamified quests may vary, but problem-solving remains a core requirement, promoting meaningful communication.

2. OBJECTIVES AND RESEARCH QUESTION

2.1 General Objectives

The primary objective of this digital quest-based learning environment is to tackle the following inquiries: (1) what are effective methods for using digital quest-based learning to improve 4Cs skills in an English as a Foreign Language (EFL) environment and (2) how can teachers effectively handle obstacles and challenges while developing digital quest-based learning materials and incorporating them into their teaching practices. By addressing these research questions, this proposal aims to furnish useful advice and practical insights, providing educators with a roadmap for leveraging digital quest-based learning to enrich 4Cs (communication, critical thinking, collaboration and creativity) experiences within EFL environments.

2.2 Specific Objectives

The specific learning objectives set for this digital quest-based learning environment are based on the learning objectives established for the development of the didactic unit to which this proposal belongs, and are based on the Organic Law of Education 3/2020, which modifies the Organic Law 2/2006 in Spain:

- **Acquisition and development of communicative functions:**
 - Exchange information about ways of spending free time.
 - Establish comparisons between own ways of spending free time and others.
 - Express permission, prohibition, obligation and advice about daily issues such as household chores and home rules.
- **Acquisition and development of vocabulary of common use and interest:**
 - Leisure time, physical activity and home daily life.
- **Acquisition and development of basic conventions and strategies:**
 - For production in different formats: written and oral interaction.
 - Strategies and techniques to perform successfully in different daily situations.
 - Tools for self-assessment.
- **Using language as a means of communication** and a tool for personal enrichment and self-realization. Developing tolerance, respect and understanding towards other cultures, countries and people from different backgrounds.

This holistic approach to language learning aims to provide students with opportunities for communication, language structures, vocabulary acquisition, development of digital skills and cultural awareness.

3. METHODOLOGY

This chapter introduces the language learning context and the profile and needs of students. It then proceeds to discuss the design and rationale behind the proposed application and the tool chosen for the purpose.

3.1 Learning context, students' profile and needs.

This digital quest-based learning environment is aimed at 1st year of secondary education (7th grade) in the subject English as a Foreign Language. It is intended to be carried out as a revision task at the end of a unit developed in the first term of the academic year, to consolidate the content learnt and prepare students for the upcoming test. The high school where it is to be implemented is a charter school located in Las Rozas, Madrid, with a population ranging from middle to high socio-economic and cultural backgrounds; most of our students are from Madrid, but there is a small percentage coming from other countries such as Morocco, Romania and Ukraine. A charter school is a type of educational institution that is privately owned but receives funding from the government. This enables the school to provide quality education at low expenses for families, combining private management with public aid.

Based on the Common European Framework of Reference for languages, at this stage, the students' level of English is A2 (Council of Europe, 2020). They can understand oral and written simple texts on familiar topics and can take part in simple communication and interaction tasks. It is of paramount importance to mention one of the features that distinguishes the high school from those in the area: in the English subject, regular classes with an average of thirty students are divided into two groups, which have numerous benefits, such as more individualized attention and opportunities for engagement and participation. This measure contributes to a more effective learning experience in which the acquisition and development of the target language is fostered. They also have a weekly class with an English native assistant, which offers a valuable opportunity for real language exposure as well as interactive communication.

Regarding their digital competence, it is important to highlight the school digital project: since the COVID pandemic, each student owns their own portable device, so the curriculum content is covered fully digitally. They have been working with Chromebooks

for four years, being familiar with platforms such as Blink Learning, Google Classroom and different educational apps and tools, including the one used to implement the present proposal, Quizizz. Classrooms are equipped with smart whiteboards and are supplied by a powerful and reliable internet connection.

The sixteen-student group aged 12-13 years old who are to take part in this digital quest-based learning environment has positive behavior and attitude towards the English classes. Overall, they have an active participation, showing eagerness to learn and take part in activities. They also show good cooperative skills, they usually sit in groups of four and are used to working in teams, creating a cooperative and respectful environment. However, it has been observed in English as well as in other school subjects that sometimes students get bored and lose attention when traditional explanations or more conventional classroom activities are done. On these occasions, despite the school's implementation of a programme to block content on students' devices, they have been caught browsing the Internet or playing video games when they are not supposed to. Having a Chromebook at their disposal can be a double-edged sword and it should be our duty as teachers to instill a good use of new technology in our students, turning it into our ally. As stated in the European Framework for the Digital Competence on Educators (2017), education is facing rapid changes, which demand teachers to be equipped with a set of new competences that, if used properly, will enhance and innovate the learning process. Giving technology the same use that would be given to a paper notebook is useless and something that cannot be overseen in today's society; following Kingsley & Grabner-Hagen (2015) words, for literacy to be considered new, it must be integrated into authentic situations and used to promote 21st century students' learning outcomes.

In essence, it is therefore one of the major needs identified, and one of the purposes of this proposal, to implement effective methods which provide students with appropriate digital literacy to use their digital devices in a useful and safe manner while improving 4Cs skills, and to help teachers handle obstacles such as the previously mentioned, providing them with appropriate tools for leveraging digital quest-based learning to enhance communication, critical thinking, collaboration and creativity in EFL environments.

3.2. Design and justification of the application.

As mentioned in the theoretical framework, the development of this proposal will be based on the stages found in the Learner-centered Gamification Design Framework

(LEGA) proposed by Baldeón, Rodríguez and Puig (2016). Upon consideration of the context and the learners' profile and needs, it has been considered that digital quest-based learning is the most suitable approach to foster students' engagement in their learning process while developing 21st century skills and digital literacy. The first step to design the proposal has been to choose the content to be gamified and the goals and outcomes that are to be achieved through it; teacher's daily observation in class has been crucial to make this decision. The content to be gamified will be vocabulary about leisure activities and household chores in combination with the use of modal verbs to express ability, obligation, prohibition and advice. Students have been working on this content on their Chromebook devices in class for two weeks, and now, they are going to gather all the knowledge learnt and use it to solve a collaborative digital quest-based learning environment as a way of revising for the upcoming test that they will face shortly.

Once the content and learning outcomes are clear, the next step is to start planning the design of the digital quest-based learning environment and its gamification elements. The platform chosen for this purpose has been Quizizz. Quizizz is an online learning platform which is gaining popularity among educators due to its capacity to enhance students' learning motivation through an engaging learning environment (Pitoyo & Asib, 2020; Dhamayanti, 2021). The platform has many customizable features, being the elaboration of interactive quizzes for assessment purposes probably the most widespread. However, taking advantage of the latest features incorporated by Quizizz: holding instructor-led live lessons that can be running up to forty-eight hours, this proposal intends to give the platform a slightly different approach by creating a collaborative digital quest in which, arranged in teams, students will embark on a journey along of which they will have to overcome different missions to reach their final destination: Teenagehood Land.

Quizizz can be used by teachers and students as something more than an assessment tool, making it an effective tool for improving 21st century skills of students, especially critical thinking, communication and collaboration (Syafriafdi, 2023), aligning thus with the purpose of this proposal. Firstly, critical thinking skills can be enhanced by creating tasks that require students to analyze, synthesize and evaluate information in order to find the solution, and not just provide answers based on memorization (Syafriafdi, 2023). Moreover, Quizizz also contributes to the development of problem-solving skills, constraining students to solve tasks in a limited time given, having to think quickly and accurately (Kristiani & Usodo, 2022). Immediate feedback, another of the features of

the platform, contributes to fostering the acquisition and development of this problem-solving skill, since students reflect on the feedback provided and identify their areas for improvement (Syafriafdi, 2023). By promoting these skills, students become more conscious of their own learning and thinking process.

Regarding communication and collaboration skills, Quizizz allows meaningful interaction of students, both within the same team, to complete tasks together and achieve a common goal, and also competing against others (Muji et al., 2021). By working in teams, students share knowledge with peers and get involved in discussion to reach agreements and find a common answer or solution, while learning to seek strategies to convey their thoughts and ideas in an effective way (Syafriafdi, 2023). According to Zainuddin et al. (2020), the regular use of Quizizz can cause significant improvement in the capacity of students to cooperate and help each other. As regards creativity, it will be also enhanced in this digital quest-based learning environment, by having students use the drawing feature of the platform for the completion of some missions. The different missions included in the digital quest-based learning environment are presented in an easy, visual and attractive way to catch students' attention. For this purpose, PNG digital images from the webpage www.cleanpng.com have been used, to enhance the visual appeal and clarity of the missions throughout the digital quest-based learning environment. Finally, the last step is to assess the digital quest-based learning environment, by reflecting on its effectiveness and proposing improvements for future implementations.

To summarize, the determination to create this digital quest-based learning environment is based on the analysis and consideration of the learning context and the students' profile and needs. After observation and reflection, a decision was made by the researcher: gamification would enhance commitment and engagement while fostering the development of 21st century skills and digital competence. This perfectly matches with the uses offered by the platform Quizizz to improve critical thinking, problem-solving, communication, creativity and collaboration skills among students, creating an enriching learning experience.

4. PEDAGOGICAL APPLICATION

4.1 Instruments and procedures.

To set the quest's appropriate atmosphere and immerse students in the learning missions, a narrative or storyline is necessary (Haskell, 2013). The narrative of this digital quest-based learning environment starts with students receiving a message

explaining that in a distant galaxy, a group of teenagers is facing a decisive and important moment in life, as they stand on the threshold of adolescence. They must embark on a journey to Teenagehood Land, where they will have to overcome missions in order to reach their final destination. However, the intergalactic teenagers cannot complete the quest on their own; our Spanish students have been invited by the intergalactic mentor to guide the group through a quest, where they will find different trials and missions that will test their courage, resilience and ability to cooperate in order to find their way to Teenagehood Land. Their journey promises to shape and change their lives forever, as they embrace the adventure of entering Teenagehood Land.

Following [Werbach and Hunter's pyramidal hierarchy \(2015\)](#), (Figure 1), this digital quest-based learning environment will include the following game elements, which, as found in Marczewski (2017), are common for all types of players' behavior:

- Teams: cooperating in teams towards a common goal fosters cooperation and responsibility. Teams will be made by the teacher, considering all the students' needs and learning profiles to ensure heterogeneity.
- Nicknames: chosen by teams, which create a sense of community and belonging to the group.
- Avatars: customized by the teams, an element which also contributes to creating a feeling of belonging.
- Rules: to introduce students into the digital quest-based learning environment and explain to them how everything works.
- Leaderboard: used as a strategy to make students aware of their progress, encouraging them to keep up good work and creating a feeling of engagement and motivation.
- Time pressure: introducing some time pressure can create an exciting atmosphere and encourage students to focus on finding solutions quickly, developing problem-solving skills. The platform offers two options: Timer Off or Default Timer; the latter has been chosen to carry out this digital quest-based learning environment. Among its main features, it can be highlighted that there is a visible countdown timer and, apart from the points awarded by the teacher for each task, students get 600 points for a correct answer and up to 400 more based on speed.

- Points: received after completing the different missions successfully. Points act as immediate consequences for good work, reinforcing the connection between work and positive outcome. As previously explained, there is a fixed amount of points established by the instructor and an amount set by default by the platform, depending on accuracy and speed.
- Bonus: apart from the points collected for correct answers, bonus points are given to the fastest groups to answer.
- Tips: provided at specific tasks to guide and direct students, balancing complexity. While the digital quest-based learning environment is displayed on the digital whiteboard, students can use the 'raise hand' feature to ask any questions or clarify doubts concerning the game.
- Scaffolding: each mission starts with easier tasks and gradually increases in challenge, aiming to balance task complexity and avoid boredom in some students and a sense of frustration in others.
- Feedback and progress: to keep students engaged in the game, progress measurement and feedback must be provided as they advance. After completing each task, students will be informed if their answers are correct or incorrect, and the leaderboard will be displayed on both their devices and the digital whiteboard. At the end of the game, the platform generates a report with all the questions, answers and percentage of accuracy, which is shown to both the instructor and students.
- Fixed reward: at the end of the digital quest-based learning environment, the winning team will choose a movie to watch after taking the exam (among a selection of movies previously made by the teacher).

Regarding the materials and tools used for the development of the digital quest-based learning environment, students will use their personal devices (Chromebooks) and digital pens, the classroom smartboard and teacher's computer will also be used to display the live quest in class. Students will join the app used, Quizizz, by entering a code that the teacher will share with them.

To summarize, through an appealing narrative and the use of gamified elements, this digital quest-based learning environment gives students the opportunity to get immersed in an interactive and motivating learning adventure while they revise the

content previously studied in an active and participatory way to get ready for their next exam.

4.2. Implementation proposal

Session 1

- Introduction.

The lesson will start with some time devoted to explaining the rules and instructions for the digital quest-based learning environment in which students will participate during two sessions to revise for the upcoming test. The teacher will call out the different teams, previously arranged in an heterogeneous way to ensure fairness and diversity, and will ask teams to sit together and think of a nickname that represents their team. They will need it to join the digital quest-based learning environment by entering the code provided. Once they are logged in, they will have to choose an avatar that represents their team throughout the quest. The platform will show them different features to customize their avatars. ([See Appendix 1](#))

Once all the teams are logged in, the adventure starts! On their screens and the digital whiteboard they will meet the Galaxy Mentor for the first time, telling them instructions and what their role is in guiding intergalactic students to complete the different missions that will allow them to reach their destination. ([See Appendix 2](#))

- Mission 1- Leisure Time.

Mentor says that intergalactic students are struggling to express themselves about their hobbies and interests. Teams have a crucial mission: help them discover and express their passions. Teams will open a video in which teenagers talk about their ways of spending free time. After watching it, they will have to answer some questions to prove their understanding. There are different types of questions: multiple choice, True or False, fill in the blank. Groups will have forty-five seconds to answer each question, they will see the timer on their screens, with volume increasing as the countdown approaches. Teams will earn one point for each correct answer.

Mission 1 culminates with the teams expressing their leisure time preferences, but in order to do so, they will have to use creativity: mentor has asked them to draw a bubble diagram showing the way they enjoy their free time. Once they have agreed about the most common activities, they will proceed to draw on their Chromebooks screens using their digital pens. Five minutes is the time set for this task, where students will earn ten points. ([See Appendix 3 for Mission 1 sample](#))

The leaderboard is displayed at the end of each task completed. ([See Appendix 4](#))

- Mission 2- Duties and responsibilities at home.

Mentor is back with another mission: this time, intergalactic students are facing challenges in their homes. Teams must help them understand, communicate and collaborate in family relationships. Their mission is to show them the concept of responsibility at home and the importance of setting fair rules. To start with, teams will take part in a live poll answering questions about household assistance. Upon completing the quiz, they will check their profile based on their responses, ranging from beginner to expert levels of household help. They will be given some time to discuss if they agree with the profile assigned and what could be done to improve. Poll does not award points, but students must always take into account that being fast is a bonus in this quest, and speed will make them upgrade their positions on the leaderboard.

After this frenetic warming-up, teams will be commended to create a poster containing the five necessary rules that both parents and children should have at home to ensure a peaceful atmosphere. Tips will be displayed guiding students to use the modal verbs they know as well as household chores vocabulary. Time devoted to this task will be ten minutes and the amount of points earned will be ten. ([See Appendix 5 for Mission 2 sample](#)).

Session 2.

- Mission 3 - Useful advice

Mentor gets back in touch to inform that Intergalactic students are at a crossroads and the teams' useful advice is crucial. They will be shown pictures with problems that teenagers find in their daily lives in different contexts: at home, at school, hanging out with friends... Teams will have to discuss and give advice on how to handle them. Tips will be given to use the correct modal verb studied for that purpose. As in previous occasions, in this mission, speed keeps being an ally, which, apart from the point awarded for each piece of advice given, will make teams earn bonus points.

Teams still need to accomplish one more task to culminate this mission: mentor shows them a letter from an intergalactic fellow who has just arrived to the galaxy and needs advice to handle how to fit in his new life. Using the ideas previously discussed and the vocabulary and structures revised in the previous missions, teams will cooperate to write an informal message with advice to adapt to his new lifestyle. Once again, tips will be given to use certain structures and to make their letter more visual and appealing by

incorporating pictures (available feature on the platform). Ten minutes will be devoted to this task and students will earn up to ten points. ([See Appendix 6 for Mission 3 sample](#)).

- **Mission 4- Word-Quest.**

In this mission, teams find a big challenge: Mentor wants to test their knowledge and speed by answering a set of questions about the content learnt throughout the unit starting with all the letters of the alphabet. They will only have thirty seconds for each letter. ([See Appendix 7 for Mission 4 sample](#)).

After this intense final mission, Mentor is back to thank students for their cooperation, outstanding creativity, communication of ideas and problem-solving abilities. He is forever thankful that they have helped his intergalactic students overcome teenage problems and reach Teenagehood Land. Before saying goodbye, he wishes good luck to earthly students and encourages them to keep working hard in order to succeed in all the challenges and quests they encounter in life. The leaderboard is shown with the final ranking. The winning team will have the pleasure of choosing a movie to watch altogether in class after taking the upcoming test. ([See Appendix 8 for Mentor's farewell](#)).

Link to the full digital quest-based learning environment:

https://quizizz.com/admin/presentation/662046b7bff5a6d6bf25027c?source=lesson_share

4.3 Assessment proposal.

Upon completing the digital quest-based learning environment, various tools and methods will be used to gather valuable data that will shed light on whether the proposal has met its aim. These will be the following: firstly, an assessment including Likert scale questions and open-ended prompts that students will be invited to complete; secondly, the detailed performance reports generated by Quizizz after completing the digital quest-based learning environment; thirdly, teacher's observations during the development of the task, and to finish, an evaluation rubric completed by the teacher to assess the design and execution of the proposal. The data collected will be used to pinpoint areas of strength and areas needing improvement, offering a roadmap for further development in future implementations of the proposal.

4.3.1. Students' Assessment.

Based on the objectives set, content covered and the technological tool used in the quest-based learning environment, an assessment sheet containing Likert scale statements and open-ended prompts has been created by the researcher. Feedback was taken by the field expert. Students will be asked to fill out the sheet. ([See Appendix 9](#))

4.3.2. Teacher's Assessment.

To ensure that the proposal created is effective and engaging for students and that it incorporates the 4Cs and objectives set for the purpose, a rubric has been created, based on the study carried out by Radifan and Dewanti (2020). ([See Appendix 10](#)). In addition, with the aim of assessing the digital tool chosen, a checklist has been created, based on the comprehensive framework for assessing educational technologies found in The Online Tech Tool Evaluation Rubric (World Education, Inc., 2020). ([See Appendix 11](#)). Upon completion of the digital quest-based learning environment and after gathering the data provided by the students' assessment sheets as well as the reports generated by Quizizz, teachers will proceed to fill out both assessment forms.

4.3.3. Evaluation of the Pedagogical Application

Although the digital quest-based learning environment has not been implemented yet in a classroom context, the assessment rubrics to be filled out by both students and teachers have been carefully designed by the researcher to assess its effectiveness and collect valuable and meaningful data to ensure a sustainable learning environment. As stated by Ben-Eliyahu (2021), sustainable learning in education refers to the continuous renewal and adaptation of knowledge, combining independent and cooperative learning, active involvement and transferability of skills. This approach allows learners and teachers alike to renew, rebuild and reuse their knowledge while having an open attitude and adapting to challenges that require learning and relearning (Ben-Eliyahu, 2021). Therefore, feedback from both teachers and students will be crucial to refine and improve the design and implementation of the digital quest-based learning environment.

This digital quest-based learning environment aiming to enhance the 4Cs -communication, collaboration, critical thinking and creativity- in an EFL classroom shows significant potential. By leveraging gamification, the digital-quest based learning

environment boosts students' engagement, motivation and collaboration in class, while addressing the initially mentioned issue of students losing attention and using their electronic devices for non-educational purposes. As stated by Haskell (2013) and Werbach and Hunter (2020), the use of an engaging narrative and gamified elements surely contribute to the creation of an immersive learning experience, which leads to better understanding and retention of the content studied while promoting the development of essential 21st century skills. With regard to feasibility, choosing the platform Quizizz as the tool to support the digital quest-based learning environment offers several advantages. Quizizz is user-friendly, easy to be accessed by both teachers and students with differing levels of digital literacy, and it provides immediate feedback, a highly beneficial factor for keeping students engaged.

However, the digital quest-based learning environment also presents some potential limitations and weaknesses which may affect its effectiveness due to factors such as the high school's facilities and the characteristics of the target population where it is to be implemented. For instance, technical problems or unfamiliarity with the digital tools could have a negative impact on the learning experience. Moreover, for correct development and implementation of the digital quest-based learning environment, digital resources and preparation time are needed, an aspect that might pose challenges in resource-limited schools. In the context of our high school, the good and reliable internet connection and the mastery of the digital tools used by both students and teachers are undoubtedly an asset for the successful implementation of this digital quest-based learning environment. However, in other contexts where the internet connection may not be as reliable, technical matters such as disconnections or slow loading could affect and interfere with a successful implementation of the digital quest-based learning environment. Other aspects to take into consideration are the level of knowledge on gamification and gamified elements of teachers or how to effectively incorporate the 4Cs into the teaching curriculum, factors which might pose big challenges if teachers lack sufficient training skills and confidence in using digital tools and gamification strategies.

Specific shortcomings have also been identified in the tool chosen: Quizizz. One major issue is its limited customization features, affecting the visual design and personalization of the learning environment. For instance, the purple fixed background reduces the possibility to create a more tailored experience. In addition, Quizizz sessions can remain active for forty-eight hours, suitable for short quests, but

insufficient for longer and more ambitious ones. Furthermore, the integration of PNG images might also pose technical challenges such as difficulty in finding appropriate free pictures, having to register for access and having a limited number of free pictures to download per day. Issues can also be experienced when it comes to uploading the pictures to the platform, due to picture size limits.

In summary, the digital quest-based learning environment shows great promise in increasing engagement and promoting 21st century skills, but its success would depend on several factors and circumstances such as technical infrastructure, level of digital competence among teachers and students and the available resources for its preparation and implementation. Addressing these challenges is of the highest importance to ensure the effectiveness of the digital quest-based learning environment.

CONCLUSIONS

The primary objective of this proposal was to examine the effectiveness of digital quest-based learning environments in enhancing the 4Cs skills -communication, collaboration, critical thinking and creativity- among 7th-grade students learning English as a Foreign Language. Before the introduction of the digital quest-based learning environment, students studied leisure activities and household chores vocabulary and the use of modal verbs to express ability, obligation, prohibition and advice for two weeks. Once they were familiar with the content, the digital quest-based learning environment was presented, with the aim of carrying out a collaborative revision before the approaching test. This research has illustrated that integrating gamification into the EFL curriculum by means of a digital quest-based learning environment can help increase students' engagement, motivation and the development of the essential 21st century skills.

Among the main contributions of this work, the following must be highlighted:

- Enhanced engagement and motivation: the digital quest-based learning environment successfully addresses problems of students' disengagement by making use of a motivating storyline and gamified elements. This approach promotes active participation and collaboration, essential for meaningful learning.
- Development of 21st century skills: by focusing on the 4Cs, students not only improve language proficiency, but also develop critical skills, necessary for their future academic and professional success in life.

- Practical framework for teachers: this proposal provides a detailed roadmap for teachers to create and implement digital quest-based environments in their teaching practices, highlighting both the benefits and possible challenges as well as strategies to mitigate them.

After analyzing the identified limitations, future lines of work and research should focus on improving the quality of digital quest-based learning environments. This would involve seeking and testing alternative platforms and tools which offer better customization and can be used in more complex and extended quests. Indeed, future research could explore the implementation of more extensive digital quest-based learning environments in the English as a Foreign Language curriculum, covering various complete units or even the full curriculum. This procedure would shed light into the effectiveness of the approach across different EFL learning settings. In addition, extending the use and implementation of digital quest-based learning environments to other school subjects could provide valuable and useful data regarding their applicability and effectiveness across different areas of study.

In conclusion, digital quest-based learning environments represent a promising sustainable learning approach to modern education (Ben-Eliyahu, 2021). By enhancing engagement and fostering the development of essential 21st century skills, it has the potential to transform traditional classroom dynamics. Addressing the identified limitations in future research will further strengthen its potential to become a transformative and powerful educational tool, ensuring that it can meet the ever-evolving needs of both students and teachers.

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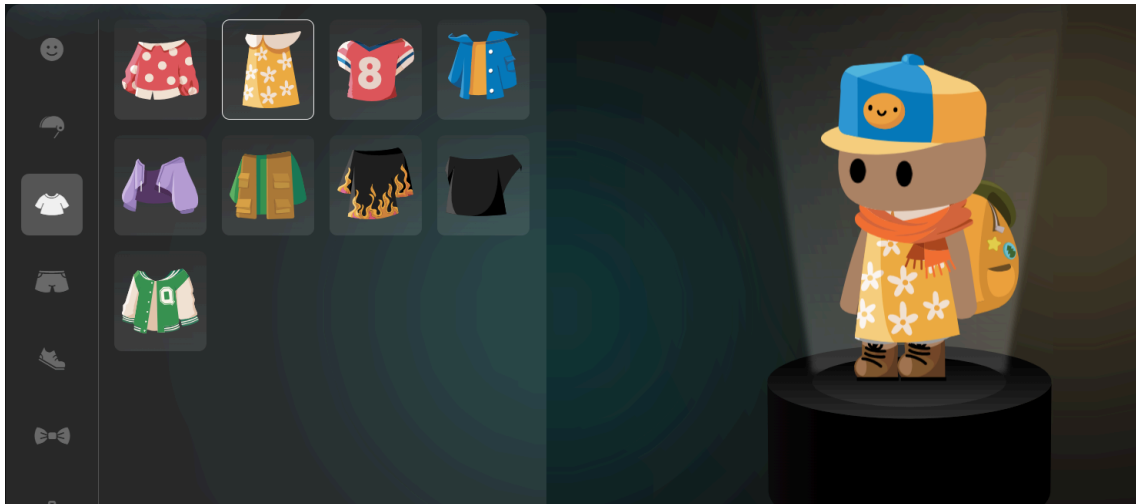
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APPENDICES

Appendix 1

Sample of Customizable Avatar of the Digital Quest Based Learning Environment.



Link to the full digital quest-based learning environment:

https://quizizz.com/admin/presentation/662046b7bff5a6d6bf25027c?source=lesson_share

Appendix 2

Digital Quest Based Learning Environment Screenshots: Meeting Mentor and Instructions.



In a far away Galaxy, a group of teenagers finds themselves at a crossroads in their lives. They are starting a new chapter, their hearts full of excitement and uncertainty as they prepare to embark on the most exciting and life-changing journey of their lives.



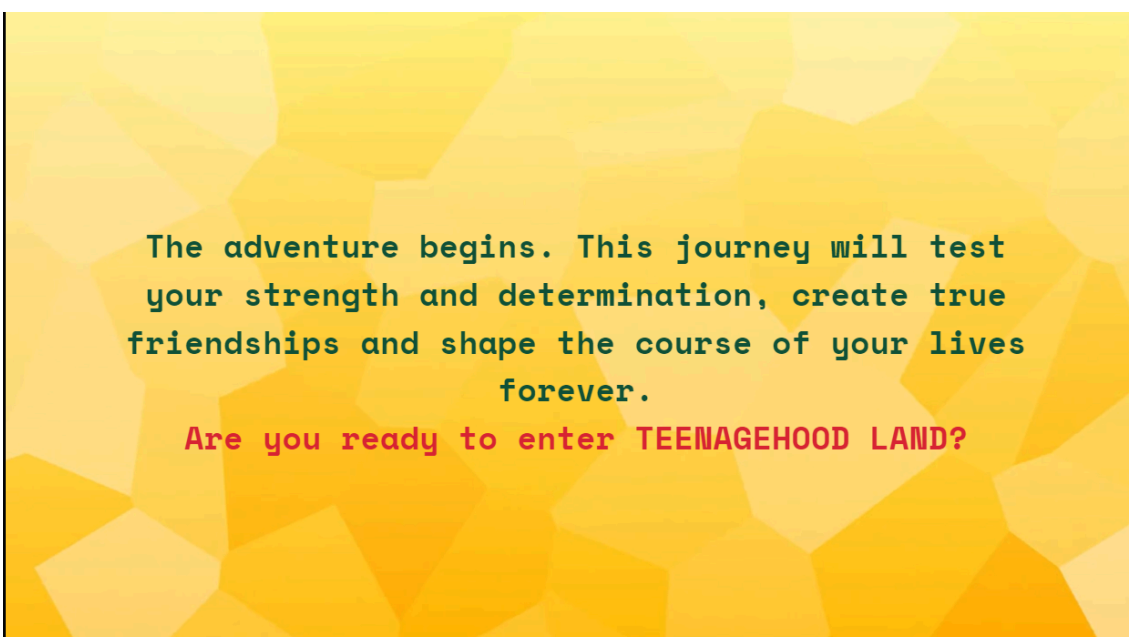
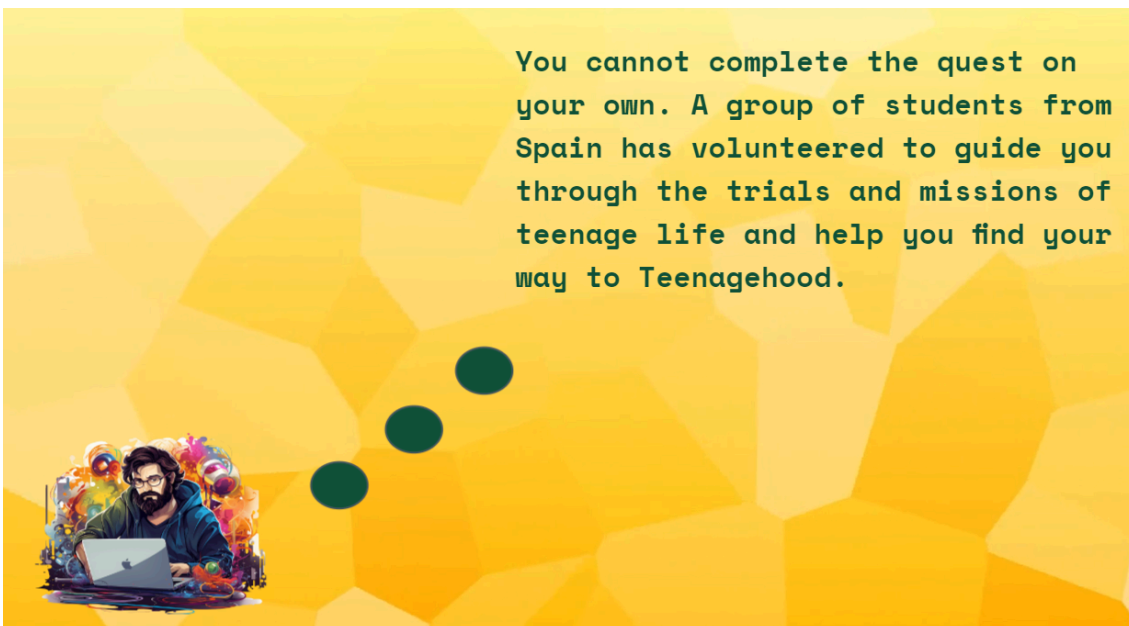
Their Mentor has gathered the teenagers together and unveiled a grand quest they must overcome:



"Young adventurers, you stand on the brink of adolescence, a time of great change and discovery. But the road ahead is full of danger, and you will need courage, resilience, and cooperation to overcome the challenges that lie ahead."

Our quest is to travel to Teenagehood Land, but on the journey, you will find several missions to accomplish, which will prove if you are ready to reach such an important destination.





Appendix 3

Mission 1 and Sample Task.


MISSION 1

Your intergalactic fellow students are struggling to express themselves about their hobbies and interests.
You have a crucial mission: help your intergalactic counterparts discover and express their passions.







Watch the following video about ways of spending free time. Then, answer the questions:

<https://www.youtube.com/watch?v=YUii2o1gCD>







Which hobby do Liam and Ben have in common?

 <p>Watch horror movies</p>	 <p>Play cricket</p>	 <p>Read history books</p>	 <p>Play computer games</p>
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Appendix 4

Example of Leaderboard Shown After Completing Tasks and Missions.

Rank	Name	Score
1	 Galaxy savers	1410
2	 Brave helpers	0
3	 Earth Teenagers	0
4	 Superhumans	0

Appendix 5

Mission 2 and Sample Task.


MISSION 2

Your intergalactic friends are facing challenges in their homes. Let's help them understand, communicate and collaborate in family relationships. Your mission is to show them the concept of responsibilities at home and the importance of setting fair rules.



How helpful are you at home? Discuss with your group members and complete the following interactive quiz.

- Write down your answers (how many As, Bs or Cs you choose).
- Upon completing the quiz, you will receive scores based on your responses: ranging from beginner to expert levels of household assistance.



It's time to do the dishes after dinner. You:

A) Offer to help wash and dry the dishes right away.

B) Help with the dishes if asked by a family member.

C) Leave the dishes for someone else to take care of later.

Find out your profile:

- If you chose mostly A: Congratulations! You are a proactive and helpful person who takes initiative and assists with household chores.
- If you chose mostly B: You are cooperative and willing to help when asked but may benefit from taking more initiative in completing household tasks.
- If you chose mostly C: You should improve in taking responsibility and contributing to household duties. Consider finding ways to become more involved and proactive in helping out at home.

Do you agree with your score?
What could you do to improve?

Appendix 6


Mission 3 and Sample Task.

MISSION 3

Hi there! Intergalactic students need your advice on how to act in some daily situations they are having problems with. Look at the photos and provide useful advice with your team.



TIP Remember to use the appropriate modal verb to give advice.



What can I do?

Students will type their response here (max 1000 characters)

Show your work

Students can upload images alongside their answers


Appendix 7

Mission 4 and Sample Task.

MISSION 4

Hi there!

In this big final challenge, I want to test your knowledge and speed by answering a set of questions about the content learnt throughout the unit starting with all the letters of the alphabet. You will only have thirty seconds for each letter! Good luck!



L

Household chore involving washing clothes.

LAUNDRY

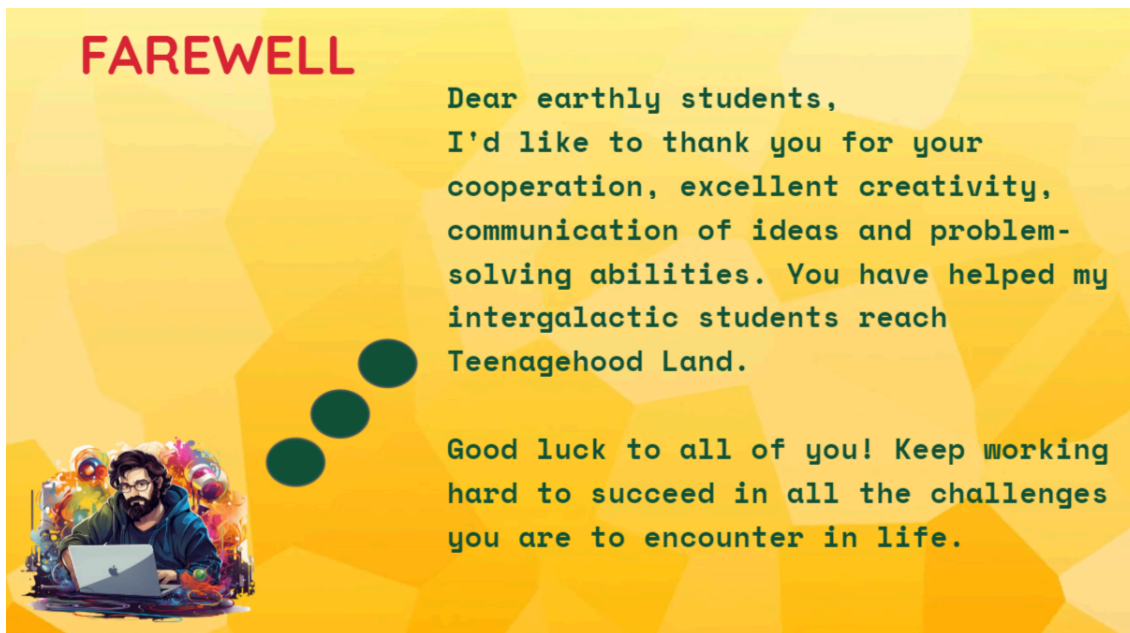
Student view

Type your answer in the boxes

L A U N D R Y

Appendix 8

Mentor's Farewell.



Appendix 9

Students' assessment sheet.

To what extent did the digital quest-based learning environment help you in your learning process? Choose from 1 to 5:

1 (Strongly Disagree), 2 (Disagree) 3 (Neutral), 4 (Agree), 5 (Strongly Agree).

	1	2	3	4	5
A. Content and learning objectives.					
The digital quest-based learning environment helped me improve my vocabulary related to the topic studied: leisure time and household chores.					
The digital quest-based learning environment helped me practice and improve my ability to express permission, prohibition, obligation, and advice.					
The quest included questions that required me to think, analyze and apply what I've learned.					
The digital quest-based learning environment encouraged me to think of creative solutions and use my imagination.					
B. Cooperation					
I worked collaboratively with my teammates to complete the missions found on the digital quest-based learning environment.					
I ensured that everyone in my group participated and contributed to the digital quest-based learning environment.					
I communicated my ideas during the digital quest-based learning environment.					
I listened to my group mates and responded appropriately.					
C. Usability and Accessibility					
The tool Quizizz was easy to use to complete the digital quest-based learning environment. I could easily access and use all the features of Quizizz.					
There were no technical issues while completing the digital quest.					

Instructions for each mission were clear and easy to understand.					
D. Engagement and Motivation					
The missions found in the digital quest-based learning environment were interesting and kept me and my team engaged.					
The digital quest-based learning environment included a wide variety of elements that made the learning experience fun and engaging					
E. Overall Experience					
I enjoyed the experience of the digital quest-based learning environment on Quizizz.					
I would like to participate in more digital quests like this in the future.					

- What I liked the most was:
- Something I would change is:
- Anything else you would like to share:

Appendix 10

Teachers' Assessment Rubric To Evaluate The Integration of 4Cs and Learning Objectives into the Digital Quest-Based Learning Environment.

INDICATOR	FULFILLMENT IN MISSIONS				
	1	2	3	4	Student's Assessment
4Cs and learning objectives					
Incorporates one or more tasks that involve creativity.					
Implements Problem-based Learning as a learning model.					
Incorporates activities that involve production skills and activities that involve reception skills in communication.					
Incorporates activities in which students work collaboratively.					
Incorporates group discussion strategy and peer questioning strategy.					
Incorporates role play and/or improvisation.					
Incorporates the instruction of communication skills for modern digital channels.					
Contains challenging but achievable content for the target population.					
Incorporates self-assessment and evaluation of collaboration.					

Appendix 11

Assessment of the Digital Tool Used: Quizizz.

	YES	NO	OBSERVATION
Ease of use and navigation			
Is the tool used, Quizizz, easy to use and accessible for both teachers and students?			
Are the instructions clear and straightforward?			
Features and Design			
Can teachers easily customize quizzes to meet the specific needs of their class?			
Does the tool offer a variety of question types that can be used to promote different skills?			
Does the tool provide immediate feedback to help students learn from their mistakes?			
Can teachers track students' progress and identify areas where students are struggling?			
Can students see their own progress while the quest is ongoing?			
Technical aspects			
Is the tool reliable and free from technical issues?			