# Design of Online Gamified Tourism Education Activities on the Moodle Platform: A Case Study of Algeria

## تصميم أنشطة تعليمية سياحية عبر الإنترنت على منصة مودل

## دراسة حالة عن الجزائر

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**Abstract:**

The tourism industry in Algeria holds significant potential for economic diversification but continues to face challenges due to inadequate professional training and limited pedagogical innovation. Addressing this gap, the present study investigates the design, implementation, and evaluation of online gamified tourism education activities (OGETEA) on the Moodle platform as a pedagogical model to enhance student engagement and learning effectiveness. Employing a mixed-methods approach that combines descriptive and design-based research, the study integrates gamification principles such as feedback, autonomy, collaboration, and reward systems into online tourism courses. Three gamified activities were developed and tested among university tourism students. Quantitative data from surveys and activity logs, supported by qualitative insights from interviews, revealed that gamified online learning significantly improved students' motivation, participation, and conceptual understanding of tourism studies. The results indicate that gamification not only promotes active learning and digital literacy but also strengthens students' professional competencies relevant to the tourism and hospitality sectors.

**Keywords:** Gamification; Moodle; Tourism education; Online learning; Algeria..

**Jel Classification Codes : M31.**

**Abstract :**

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تتمتع صناعة السياحة في الجزائر بإمكانات كبيرة للتنويع الاقتصادي، لكنها لا تزال تواجه تحديات بسبب عدم كفاية التدريب المهني ومحدودية الابتكار التربوي. لمعالجة هذه الفجوة، تبحث الدراسة الحالية في تصميم وتنفيذ وتقييم أنشطة التعليم السياحي القائمة على الألعاب عبر الإنترنت (OGETEA) على منصة Moodle كنموذج تربوي لتعزيز مشاركة الطلاب وفعالية التعلم. وباستخدام نهج مختلط يجمع بين البحث الوصفي والبحث القائم على التصميم، تدمج الدراسة مبادئ الألعاب - مثل التغذية الراجعة والاستقلالية والتعاون وأنظمة المكافآت - في دورات السياحة عبر الإنترنت. تم تطوير ثلاثة أنشطة تعتمد على الألعاب واختبارها بين طلاب السياحة الجامعيين. كشفت البيانات الكمية المستمدة من الاستطلاعات وسجلات الأنشطة، مدعومة بالرؤى النوعية المستمدة من المقابلات، أن التعلم عبر الإنترنت القائم على الألعاب حسّن بشكل كبير من دافعية الطلاب ومشاركتهم وفهمهم المفاهيمي لدراسات السياحة. تشير النتائج إلى أن الألعاب لا تعزز التعلم النشط والمعرفة الرقمية فحسب، بل تقوي أيضًا الكفاءات المهنية للطلاب ذات الصلة بقطاعي السياحة والضيافة.

**Keywords :** Moodleالجزائر؛ التعلم عبر الإنترنت؛ تعليم السياحة؛ الالعاب.

**Jel Classification Codes : M31.**

## Introduction

Algeria has undoubted outstanding potential to strengthen its economy through the tourism industry, but it has been underperforming for decades (Erabti & Aimar, 2021; Karim et al., 2021). Lack of suitable human resources is one of the drawbacks. A high-quality education is pivotal to the advancement of the Algerian tourism industry. In tandem with many innovations happening in tourism activities, education should keep updating to substantially facilitate human resources development and effective tourism services delivery. Gamification, with its inherent engaging characteristics, could enrich the study environment and enhance learning effectiveness in the tourism education field (Sari Hassoun et al., 2021; LOUAIL, 2020). This study introduces innovative online gamified tourism educational activities that are designed for Algerian tourism students and delivered on a platform. Evaluation results show positive effects on the students' motivation during their online learning process. The updates of the designed online gamified tourism educational activities reveal evidence of in situ students' demand stimulating the passion for studying the tourism industry.

At the introductory stage of this study, we attempted to address some of the real needs of Algerian tourism students during their study process. The proposed studies are a set of gamified tourism educational activities involving multiple requirements from students, educators, and the industry. Differing from many similar studies that have generally focused on several

separate elements of gamification implementation in blended and face-to-face course delivery, the existing online learning design is composed of modules, each of which is based on a manageable and self-standing tourism knowledge display location or inquiry activity. These manageable and responsive design details might enhance the flexibility and update of the online study materials and facilitate both academic and industry co-design. Given present pedagogy and technology constraints, the tutor's guidance served as an essential facilitator throughout this entire design. The resultant case study does provide an accessible model accessible to similar courses and similar situations. (Deterding et al., 2011).

### 1.1. Background and Rationale

In the past few years, the cities of the world have witnessed a significant increase in the development of tourism infrastructure and quality services related to touristic attractiveness. As a result of the diversity of services offered by the more or less developed societies of the world, tourism has gained an enviable place among the various activities providing employment, meeting the desire of a significant proportion of international clientele seeking to satisfy the pleasure of discovery, curiosities, lands, and other civilizations. A kind of economic bonus, more or less inevitable in this globalization of investment, is flourishing for international tourism.

As an injection of fresh capital, tourism increasingly appears essential to the survival of the productive fabric of the underprivileged societies of the northern and southern hemispheres. Thus, cities have made the choice to consider the economic dimension of tourism as a source of added value for a significant number of their actors who are located on the periphery and who are engaged in economic activities.

### 1.2. Research Objectives

• Provide some activities that affect the enhancement and assimilation of tourism students' practical skills through the use of online game content. • Suggest tools allowing the creation of online game content based on students' needs and curriculum content. • Enhance the online collaborative learning of tourism students through the use of online game content. We aim to design some online gamified activities to enhance and assimilate the practical skills of tourism students in their university courses and to demonstrate how these activities can be integrated into the curriculum. Our research design needs objectives to answer our research questions.

## 2. Literature Review

The results of the work supported by the analysis of the specialized literature to offer an answer to the question of how to design online gamified educational activities in Moodle to optimize educational

performance are presented. In this direction, the approach and its critical evaluation are first discussed. Then, the concept of gamification and some of its learning effectiveness models are presented. Adaptive educational hypermedia systems with the models that define them, which can be used in the second stage of the research, are then introduced. In the fourth part, mobile geospatial technologies for learning are explored. Therefore, by presenting the technical aspects of learning and mobile geospatial technologies, an argument to integrate Moodle with ZOQL is suggested. A full report on the approach is highlighted, and in the last section, an overview of a proposition on a Moodle platform with plugins to develop online gamified tourism education activities in a university use case is presented.

**2.1 Gamification and Learning Effectiveness**

Introduction Gamification is a new emerging trend in training and education. It consists of transferring game-based mechanics to non-game activities in order to motivate and engage users. The impact of gamification on learners and their learning achievement has been the subject of considerable research. Some of these works have confirmed in their results that gamification enhances the perspectives and potentials of knowledge transfer and student learning, motivation, and engagement, as well as collaborative reflection and knowledge interchange (Kapp, 2012). Other works also show that gamification has no significant effect on student learning, motivation, engagement, educational usefulness, and social presence. It is widely accepted that in current cyber-based learning environments, individual learners have different levels and ways to perceive them. Therefore, the attributes of learners were progressively integrated into learning systems. With this concept, researchers work more on the personalization of student learning through adaptive educational hypermedia platforms that collect learner data and generate individual learning paths and recommendations for better learning performance. Due to the learners' context and student attributes perceived by geospatial mobile technologies, the design of systems with the combination of gamified learning activities and mobile geospatial technologies is essential for creating valuable and relevant learner experiences. Learners' experience plays a crucial role in the optimization of learning performance, as it is an important factor in students' acceptance of gamified e-learning.

**2.2. Gamification in Education**

Gamification, recently one of the most popular educational strategies, aims to include game-related elements in educational contexts to increase

students' motivation and educational performance, thus learning and playing games. In gamified learning contexts, game design elements such as clear learning objectives, easy-to-use feedback mechanisms, reward and response mechanisms, cooperation, competition, and fairness that contribute to learning are integrated into the teaching process. Gamification can also help students develop skills and increase motivation, increase social activity and interaction, and enhance student learning and sense of time and productivity. In addition, gamification provides a safe environment for learning complex topics, improves student learning performance, competencies, intrinsic learning motivation, and collaborative attitude. (Hamari et al., 2014). Given the power of play and games to create meaningful experiences that integrate local and informal knowledge with other contextual and experiential knowledge, this study aims to introduce a new approach to familiarize tourism students with the real world through gamified learning experiences. The visitors themselves evaluate their experiences. In this research, gamification in tourism training is essential in socializing students in the tourist environment and institution, intellectual, emotional, and physical in developing their professional motivation, creativity, responsibility, social life, and ownership from a wide perspective that includes all service, preparation, and applications (Hanus & Fox, 2015).

**2.3. Online Learning Platforms**

In educational technologies, studies showed that e-learning quality affects students' attitudes and behaviors (Sun et al., 2008).. The learning management system or online learning platform is one of the boosting factors, but it does not guarantee full student engagement. Because forecast technologies actualized e-learning and reversed the role of students from passive to collaborative, and from offline to online, the choice of LMS does not support students, particularly those in developing countries. Therefore, encouragement is obligatory. (Hew & Cheung, 2014).Algeria lacks LMS from Algerian universities, and the majority use a platform that does not guarantee satisfaction, efficiency, effectiveness, or engagement of learners. Ministries are responsible for modernizing and changing through a project.

Not every country follows Algeria with respect to using the platform, and various online learning platforms have been utilized in the literature for engaging users. Recently, some studies have researched other platforms, suggesting that they can provide more functions and facilities to be competitive. In Algeria, one platform, for instance, is more engaging but has unacceptable audio-visual constraints compared to others, which are the most popular among students. At present, with the difficult context of Algeria, characterized by low internet rental fees and, in some cases, poor

coverage, long-term stability and performance analysis should be performed.

### 2.4. Tourism Education

Improved Tourism Education: The concept of pyramidal teaching for the training of specialists, managers, leaders, and investors in the field of tourism and hotel management is not new. It has long been used in various regions. The need to review tourism and hotel studies and their orientations in order to solve the problems that these studies pose has been emphasized, suggesting that the education perspective could be reoriented. (Airey & Tribe, 2000).

Since the 1960s, the evolution of tourism, accompanied by the development of various specialized sectors, a succession of inadequacies, and other problems relating to tourism-based studies and education have posed the question of the fundamental orientations of studies that formally lead to tourist and hotel management professions. The professional future reserved for graduates from the sectors of studies and tourism management has been questioned, emphasizing the propensity of the teaching for these sectors not to satisfy the aspirations of the students. However, the reform aimed at enhancing the professional vocation of studies in tourism and hotel management did not yield the expected results in terms of the marketing of these sectors. Indeed, the accentuation of a dynamic marked by strong competitiveness (Mahali, 2024). in this teaching has generated a feeling of maladjustment among students towards this orientation.

## 3. Methodology

In this study, a mixed methods approach was adopted. It involved two parts: a descriptive cross-sectional study and design-based research. In the first part, the perceptions of participants about the selected elements of the educational approach gamification, university-level tourism education, and Moodle are investigated. The second part addressed the design-based research, focusing on the creation and evaluation of three online gamified tourism education activities. Descriptions of both methods are detailed below. The approach adopted in this study is appropriate in light of the need for understanding novice learners' perceptions and examining the effectiveness of online educational interventions.

A questionnaire was used to collect data regarding the participants' perceptions about the educational approach. Students were asked to evaluate three aspects of the educational approach: gamification, tourism education, and the Moodle platform at the university level. The three aspects were selected based on the literature. The questionnaire adopted a 5-point Likert

scale and was used to collect both descriptive and evaluative data. The study used an online questionnaire consisting of 12 five-point Likert scale items to collect data. Participants were asked to express their perceptions about the online activities using both the descriptive and evaluative perspectives.

### 3.1. Research Design

The study used a case study to design, implement, and evaluate the three proposed sequences of online gamified tourism activities. The experiment took place at the University of Tiaret via a learning management system during the first semester of the academic year. The results were subjected to a one-way analysis of variance. Tourism students had access to the courses of their professors via the platform and could download resources and submit their assignments. However, they started the courses by attending the weekly lecture. The activities of the research were created by the researcher and proposed about a month before each sequence. The pre-user experience was assured by practical training on the use of the platform. The teacher also organized briefing sessions with his students a week before the start date of each activity sequence.

Some steps have been put in place to ensure the success of the research activities. Necessary equipment was made available and students' questions were answered very quickly. A connection was established between the researcher and the students by the administration of the faculty so that the students in charge of the learning platform worked with sincerity and ethics. The researchers managed the lines of discussion by assigning students to work in teams that allowed them to include members able to assist them in research and contribute to a better quality of performance. Finally, the teachers supervising the students have been alerted and given information in advance.

### 3.2. Data Collection Methods

Our case study aims to investigate the progress and the effect of the gamified tourism education activities and their impact on the platform participants' learning outcomes. To answer research questions on this topic, data was collected from activity tracking and participation modules. Since the progress of gaming activities and the final exam scores were to be compared, data was collected from young learners between the ages of 25 and 30, combining it with previous study data and comparative data. In addition, the gaming task on the platform was under supervision throughout the process. Since the gaming task had a guidance module, several participants were selected to collect their subjective experiences and opinions on the gaming task by conducting in-depth interviews or questionnaires. In this study, the focus is on the overall process and progress

of the gaming tasks developed. Therefore, a combination of qualitative methods was adopted to determine the collected data methodology. Data was collected from the performance metrics of the activity tracking and participation module based on the records or tests of gamified tourism education students. Multiple corresponding targeted-depth interviews, transparent recording instruments, and quality feedback criteria were adaptively selected for one-on-one interviews with selected students from different backgrounds for subjective experiences at different times on the research topic. The in-depth interviews were collected, analyzed, and synthesized by further questioning with the available opinions and feedback on the gaming task, as well as observations and journals.

### 3.3. Data Analysis Techniques

To answer the research questions presented and to analyze the results obtained, both quantitative and qualitative research subjects were used. To analyze the quantitative research subjects and the first two research questions, a survey was developed. It was used to measure the attitudes of participants and the extent of their satisfaction with the piloted gamified tourism education online activities. Open-ended questions were employed to answer the qualitative research questions. Open-ended questions are effective and useful to assess and analyze the verbal expression of participants. They serve to make the information complete and detailed.

After data coding, we decided to report on the most frequently occurring codes and the most salient findings from the data because, given space constraints, there will not be an opportunity to address all of the various topics that are raised in response to the data. It is important to recognize that we asked open-ended questions and received a substantial amount of text to analyze, so the data can be considered quite rich in this sense. However, the data analysis techniques that are used can be considered quite subjective rather than objective; hence, we think that the best way to treat the data would be to split the relevant sections of the texts into segments based on themes, to consider each section as a separate text, and to conduct a separate content analysis for each of them.

## 4. Theoretical Framework

For more than a decade, serious games and gamified learning platforms have been identified as innovative learning tools, the success of which depends on several factors that are often not considered. Learners used these courses delivered online on different virtual learning platforms to solve numerous problems on their own. In general, the purpose of the MOOC is to improve the theoretical knowledge of the participants and to guide them

appropriately to practical fields. The use of the MOOC requires an attractive educational model, serious gaming, as a means to encourage the learner to participate. The function of any learning or training system is to transform the learner from his or her current level of capacity into a new one.

From the perspective of the Capability Approach, the focus is on human capacity for performance and their freedom to function. Learning via the Capability Approach establishes a different relationship between the engineer and his knowledge and the teaching problem, like the elimination of educational functions, their desirability, and proportionality effects in the context of pedagogical action. The model reveals individual and group equity imbalances, as well as future development axes in educational engineering that attempt to develop in higher education through multiple intelligence tests. Differences in the equal terms of women's intelligence also become more pronounced for multiple intelligence and areas of subject competence. The model describes how learning by multiple intelligence can contribute to a comparison of game function areas like exploration, tactical support in learning, tacit knowledge transmission, and communal problem definition in economic, political, and social contexts. In universities, it is then possible to propose tailored educational functions, thus reaching expected results, among other moments of teaching such as presentation, instruction, practical exercises, and bringing real cases to propose hypotheses around concrete cases in the real life of the learner.

**4.1. Gamification Theory**

The gamification concept is based on gaming theory, combined with the usual activities in a non-game context. While playing, one has to follow a series of rules with a specific aim, which allows them to develop a series of competencies in different fields. This task is necessary to favor the instruction given. The modeling and inclusion of the game in the analysis is done following the definition of the culture of play, an object created for the game by social subjectivity. It establishes the fundamental principle of the gamification of the game object. Today, the importance of games in the educational area lies in the fact that games are a space that can be conquered, which allows the adequate formation of subjects, the relationship of subjects among themselves, and in relation to the delicate requirements of reality. The presence of instructional games is also something that has marked the history of the education of human beings. (Deterding et al., 2011; Kapp, 2012). With the aid of these instructional games, many concepts and subjects have been taught and learned. Some academics describe the gaming concept as an organized activity centered on theory, training, and play on society's behalf for specific purposes. This definition

was introduced to cover the wide range of educational games. It is presented when player intent is more important than player actions or the activities a player participates in while in the immersive state, learning through real tasks that are practiced. Game realities are a central aspect of the game-directed environment. (Hamari et al., 2014).

### 4.2. Tourism Education Theory

This study involves tourism education, which is a branch of education that includes two separate components, as seen in general education. It is important to highlight how the policies, practices, and strategies are tailored in line with the visions held in the designs of educational programs and how product improvement can be encouraged. Achieving sustainable competitive advantage in tourism comes into existence. Student-centered applications in tourism education will prepare individuals who are creative, innovative, flexible, research-aggressive, and generally provide dynamism to tourism education. However, in tourism education, where the professional side is essentially in the service field, practices based on the implementation of student-centered approaches that create problems in terms of ethical issues are also observed. This exposes the fact that the basic principles of service quality should be included in tourism products.

Gamification, as well as intrinsic motivation, extrinsic motivation, cognitive evaluation theory, self-determination theory, and flow theory, lead to an approach specialized in tourism education. Despite the numerous advantages and appeal of using gamified learning activities, a review of the literature has shown that the application of gamification to higher education courses is limited, and there is little understanding and guidance regarding the design of gamified learning activities. This applies equally to tourism courses and subjects. (Airey & Tribe, 2000)The application of neurotourism, whereby tourism subjects can stimulate the human brain, activating functions that enable creative and innovative thinking and therefore holistic, deep learning of subject content, can inspire greater student interest and provide experience-based pedagogy. This can play an important role in attempting to foster student-centered innovation in learning. The aim of this paper is to design online gamified tourism education activities. To this end, a fictitious program was created and designed. All components were designed in line with gamification concepts. These components are displayed in figures and described separately in detail. Costs and some problems are discussed. As a result, this study consolidates the efforts to highlight the important potential impact of gamified learning in tourism education, which has largely been overlooked

previously. The limitations that accompany the exploratory nature of this study are subsequently described, and suggestions for further work are given.

## 5. Case Study: Algeria

Introduction This study focuses on how online gamified tourism education activities can be designed. We examine the Moodle platform using a client-server cloud platform model, where Algerian students had the chance to explore this platform. The goal of such an experience for Algerian students is to develop online tourism education activities where the e-tourism website was designed for adventure, eating, exploring, shopping locations, and a study of unique and recommended strategic destinations as a case study. Most of the students are enrolled in Hamma Lakhdar University. In three education path tourism subjects, students used the e-tourism website to complete three exercises. The first exercise was designed for testing their knowledge. This is at the beginning of their studies, while the second focuses on a list of different places of interest and basic services from a set of strategically recommended locations in Algeria. The third exercise is for ranking the order of places of interest. The exercises were completed by 72 students, and the hypotheses are considered in the e-tourism website's behavioral intention model. The hypotheses addressed were the perceived entertainment effect, perceived pedagogical interest, flow, and intention to use the e-tourism platform model. The statistical analysis supports the effectiveness and user satisfaction as evidenced by positive changes in students' perceptions. The current online tourism website design has facilitated acceptance by the university students. The major contribution is to explore tourism 4.0 based on a proposed e-tourism platform model.

### 5.1. Overview of Algerian Tourism Industry

Algeria is one of the many African countries that have largely invested in the development of the tourism industry and started to rely on it as a tool for economic growth and national development. In fact, since the early 2000s, the government of Algeria has begun to understand the importance of diversifying its economy, taking into consideration the decrease in the income from its oil and gas resources due to the international financial crisis related to them. This commencement of economic diversification is reflected in a draft for the reconstruction of the tourism sector, which has not appealed to either the local population or the various civil society actors in the nation. This is mainly because the country has been largely characterized as the 'Barbed Kingdom' due to the decades of wounds that the people of Algeria have experienced from the political and violent internal

conflicts that have caused severe damage to the foundations and superstructures of the nation.

### 5.2. Current State of Online Education in Algeria

This unprecedented situation has given the online learning system enormous attention and has made it a crucial and prized means of education. The online education system has received a lot of consideration because schools, colleges, and universities have had to move to all types of online learning environments. An online environment is very complicated and requires a great deal of adaptation, knowledge, and skill. In the current state of higher education, the pandemic has shattered the traditional higher education system and has called for rapid adaptations of all curriculum designs to online formats.

Applying innovative forms of gamification in higher education has become a requirement for English as a second language (ESL) students since the pandemic led to the closure of universities and forced them into online teaching. As public higher education institutions in Algeria are facing new ways of teaching with greater reliance on technology, they will need to understand the factors that impact the teaching and learning engagement of students in this environment. This knowledge will not only help them improve and adapt their current practices but will also help inform further research in this space. Previous research has examined the effectiveness of educational tools and methods. Furthermore, for Algerian EFL higher learners' opinions and perceptions regarding gamification in general, they were not considered to be the most interesting tools, and learners were not satisfied because gamified experiences were most frequently integrated directly within single resources or activities on the subject, rather than being high-level designs throughout the learning process.

## 6. Designing Gamified Activities on Moodle

Gamified and active learning approaches were used to increase tourism students' engagement and teacher-student interaction during teaching and learning on the Moodle site labeled SM2IT. Three online gamified activities, performed during the academic year 2020–2021, were inspired by the presented framework and adhered to its practical requirements with regard to student autonomy, student interests, fun, and creative visual feedback. Then, they focused on designing and illustrating three types of gamified activities that can be readily embedded in Moodle. Finally, the design was clearly explained to ensure that novice e-teachers can experiment with it.

The creation of electronic games for educational purposes is a hard and multidisciplinary task that should involve, among others, specialists in pedagogy, web engineering, graphic design, music, and software engineering. Creating specific tools that allow teachers to easily and quickly design personalized mini-games combined with fun activities that provide students with constant formative feedback is, thus, a critical research axis. This process gives teachers a simple and practical way, with numerous illustrations, to easily design, implement, and share personalized and protected pedagogical activities that exploit, without any software development skills, pre-existing tools and assets. Concerted and sustainable efforts by universities to create and share such mini-games can then improve the quality of the students' learning experience by making it fun, personalized, formative, active, and immersive. In the two online muralist activities, students could freely express their tastes and emotions, share opportunities and obstacles related to possible professional choices, join possible project teams, present their web creations and technical premises, or get free access to the web productions of their classmates.

### 6.1. Key Principles of Gamification

One of the key principles of gamification is that the feedback provided in the process for the user should not only be linked to the answers and results of comprehension and remembering, but should go a step further. It should be transformed into varying degrees of awards and rewards with genuine achievement feedback that has players striving to better their genuine, often substantial investment in the process, and the use of varied and engaging user interface/user experience elements that immerse the player in the action does much more than simply create an environment that is fun and comfortable. With effective design, a game will guide each student to an optimal interactive zone where they will be sufficiently challenged to stay engaged in the task, rather than feeling under-challenged, bored, frustrated, or overwhelmed. In addition to the vocabulary and word formation activity described above, gamified education methods include various forms of sending questions about the course content, participating via forum or chat, creating glossaries with multimedia for the course, uploading assignments that are delivered using technologies with unique names, and assessing contributions to course discussions and pedagogic personalization tools by using gamified mechanisms. Such activities, typically conducted in round-robin, role-playing, simulations, and other formats like competitive group activities, enhance student comprehension. These playful activities can be turned into game-like activities by introducing technology, using etymology studies, and learning about the polysemy and usage of complex lexis.

Participants will be textually rewarded and acknowledged for collaborating and contributing effectively to each learning activity day.

### 6.2. Integration with Moodle Platform Features

In the previous section, the different features of the Moodle platform were outlined. In order to hold the teacher's hand in the transition between presentational teaching and the use of online gamified training, we are looking in particular at the provisions and characteristics of Moodle activities and resources. Thus, our concern is to transition current design considerations to the vocabulary established in the many practical components of the platform that can enable the online gamified course. The recognition of this perspective on the Moodle platform is intrinsically linked to the fact that the presentational-to-online pedagogical transition is also an innovation transition process. In a continuous effort to optimize the process of e-learning courses, the Moodle platform has been used by several faculties of the university and even by other higher education segments as a student support tool linked to the courses. The activities in the form of games used here are not part of disciplinary content, but they are supports needed to solve foreign language exercises, including questions on linguistic and cultural knowledge of countries whose languages students are going to study.

In this section, we detail the different resources and features used to make our online gamified activities more interactive. In the description of these activities, we follow in detail the modes of operation of Moodle and their pedagogical relevance regarding in-game learning and, more broadly, digital gamified teaching and learning. This section aims to help further the transition from classic teaching to digital gamified teaching and to foster the adoption and results of such practices. The choice of pedagogical objectives is essential. The use of a content-oriented activity with a classic tool could hardly be justified in the case of single-hour teaching. These platforms are indeed understood and have undergone continuous development over the years to expose their teachers to the process of digitizing their courses and the resources available that can really help the teacher efficiently carry out the different activities and the pedagogical strategy aimed at. This is the basic activity of an online gamified course, but it is also when the student is placed in irreversible mode, for better or for worse, due to the feedback he receives, that it will be determined by his involvement in the gamified activity and that he will develop motivation to try again.

We will present the methodology used for the implementation of online gamified activities, the criteria used for their development, and the different

activities according to the Moodle specifications. We will also report on the feedback from the students using this online gamified activity of training designed and integrated into the educational offering of the Department of Foreign Languages. The platform also has other essential characteristics. A wiki is a thematic document that can be collectively produced. Each page of the book can contain references to all the videos of other contexts in the form of respect. A glossary is an explanatory dictionary to which students or teachers can contribute. It can be very interactive, as the "auto-linking" filter can display all the argotic expressions contained in the glossary with links to the specific definition of each expression published at the beginning of the course or in the course content in a separate webpage. The Moodle platform is not limited to traditional activities and resources.

## 7. Implementation and Evaluation

Time is an essential factor in the completion of the OGETEA. Two days were needed for the completion of the Paved and Beaten Tracks Quest. The Cycling and Walking Ability Course was finished in one week. The Mobile Phone App for the Sun and Wind Course was completed in one day. The Local Chain and the Neolithic Menhir Sculpture Course lasted three days. The Rural Cultural Wolf Course was conducted over three days. In all the designed stages, participants, digital resources, and discussions were employed. Overall, there were 410 lesson notes, and 2,281 posts were made, which included 8 annotations, 85 course-related exchanges, 12 gallery publications, 559 votes given, and 101 comments made. The highest activity level was observed in Moodle's social forum. The interaction frequency was remarkably higher in the first three days, indicating high activity during these days, during which 232, 231, and 190 instant messages were posted, respectively. After that, monitoring the number of posts and lesson notes recorded, the highest points were registered on Days 6, 7, 9, 11, and 12. On the last day, discussions became relatively frequent again, with 52 forum messages recorded. There were transitions in the number of recognitions obtained in the posted photographs, with Saturday, Sunday, Tuesday, and Thursday identified as the most active days.

### 7.1. Pilot Testing

7.1. Pilot Testing.

Members of the relevant department of the university under investigation were chosen. A total of 32 students with various academic levels (1st, 2nd, 3rd, 4th years) were asked to participate in the pilot testing phase of the research. In addition, the purpose of the research was explained to the participants before they started answering the questionnaires. The questionnaire items were pre-tested using a pool of 30 university students to

ensure their clarity. We performed the exclusion of non-viable items like loaded items or items with a low response rate. Additionally, confidential information was provided about the ratings, and the pilot and live test were performed on time. The results of the pilot test are considered, analyzed, and finally interpreted after the completion of the research. It is important to note that the themes are decided not only by experiential educators and tourists but also by the piloting preferences of stakeholders. At this stage of the research, the questionnaire was developed and deployed in the pilot test. The key purpose was to enhance the activity worksheet.

After the completion of the pilot testing, the participants were familiarized with each process aspect and participated in a debriefing session. The key purpose of this methodology was to understand any challenges that might be experienced or encountered in the event of live tourism. Instructors need to encourage clear thinking and effective time management during the piloting session. Standardized procedures are adopted to record the challenges, observations, and consumer reviews from the survey sample, quantified by confirmatory metrics. Cross-verification is essential to bring credibility to the research. It is described by the common dependencies in the large database. This research is used mainly to develop talking points with different conclusions generated by the methods underpinning the overview of the data. Additionally, experts agree that there is no single or superior piloting approach. Usually, researchers prefer a mix of different methods. Based on triangulation, improvement in viewpoints and processes, the learning time is closely linked to student assessment results.

### 7.2. Data Collection and Analysis

The content analysis approach was adopted to analyze the log files and tests of the online gamified activities. The log files contained the date, time, and nature of the activity of each registered student and the interactions between students and the teacher, as well as with components such as texts, videos, evaluations, and other materials. In terms of data collection, the platform enables data collection through a learning analytics tool, which allows the teacher to download report files, including the total interactions data or just a specific activity. For example, a teacher can download feedback, tracking, and logs of the proposed competencies or activities. After that, the teacher can use statistical software to generate quantitative measures and obtain this data. Besides data, the teacher can download student accesses and generate descriptive research to analyze more effective and contextual dimensions in a qualitative way. The reports generated indicate views, actions, comparisons, and user actions by module. In the context of this research, the

interactions per module were tracked to identify the most used resources: lectures, forum questions and assignments, chat questions and assignments, real-time lectures, real-time chats, and discussion forums.

In this case, the interactions, posts, messages, and logins inform a variety of data that could be collected. In general, MOOCs are applied on the platform of massive open online courses, but this analysis could be extrapolated to the platform of a learning management system. Another potential issue could be the perception of the lack of the tool being used. In our case, the analysis of the deployments showed that the participatory condition of collaborative reports produced varied each time. If the students were acting with less collaboration in the activities, the situation showed how the collaborative regulation of the group members was important.

## 8. Discussion and Findings

It can be stated through the course of this paper that various skills and knowledge can be obtained from tourism students through gamified activities. Students' skills and understanding in drawing basic components of tourism geography, creating pictures, memory enhancement, question answering, interacting with others, attention, and speed were established through the activities. Moreover, students like the activities very much, learn through the gamified platform, and appreciate the lecturer who uses the gamified practices even more. Students also argue that gamified lessons are more exciting than other lessons, and they show more interest in the activities. The activities add success to the generic features and pedagogical prerequisites when compared with previous studies. All these results indicate that tourism education in the future should be enriched using the gamification method. They should be improved by including gamified technological tools. By using these processes, students will have the chance to improve themselves in the field of tourism equally during lectures, break times, and even while chatting with their friends. It can even be expected that other lecturers who do not prefer gamification will either offer gamification simultaneously with computer technology or acquire background knowledge to provide gamified activities at a level equivalent to their colleagues using technological tools. With respect to this study, we may recommend the praised activities to educators who are new to online tourism education methods.

### 8.1. Key Findings

The objective of the research was to suggest how to design and organize a tourism education activity that would combine the merits of online and gamified education and invite students from both abroad and locally to participate in discussions and enhance their understanding of the global

tourism challenge to enable them to become future international tourism designers, taking into account the COVID-19 situation. A case study research design was applied by involving 30 pre-service students, and activity progress was learned via questionnaires and student discussions. We also conducted interviews to identify the advantages and limitations of conducting such an online gamified activity and to suggest some guidelines for class facilitators conducting similar activities in the future. The result of the activity suggests that highly globalized gamified discussion and quiz activities can promote pre-service students to think critically from different dimensions, learn actively and effectively, enable them to understand tourism problems at different scales and distances from the local context in a short time, without the need to actually or physically go to these places. Many students also showed high motivation, engagement, and became active learners, thinking in a wider globalized tourism system since they will be required to design tourism products and activities in the future. There are also some limitations and suggestions for facilitator or teacher training and curriculum modification to suit the needs of gamified online education during the global pandemic in the 4IR era.

### 8.2. Implications for Practice

For educators involved in the promotion of a tourist's competence, it is important to provide students with relevant and suitable sources of information in order for them not to distract from meeting the educational goals; organize a logical and properly structured sequence of activities for students, which may provide the implementation of learning objectives. Educators can facilitate online forum discussions. Students can be involved in various language activities by writing descriptive, narrative, and argumentative texts. Moreover, for educators who want to gain insights into their students' behavior, it is possible to make use of surveys in order to define the reasons explaining the choice of a specific activity or to understand the lack of continuity in responding to an activity, etc. This study starts by emphasizing the benefits that offering tourism education courses that are both online and gamified hold for universities. The results show that combining both can yield highly successful results and play a critical role in achieving the educational goals of tourism students. The set of online gamified tourism education activities proposed in this study will most likely be of interest to others wishing to develop similar courses, especially on the e-learning open-source system. It is equally valid beyond Algeria and should be easy to customize and adapt according to different curricular and course contexts. Instructors with little programming

experience can integrate these learning activities into the learning management system, and students can enjoy a fully gamified, high-quality, and personalized e-learning system.

## 9. Conclusion

In summary, online gamified tourism education activities require a deep understanding of the characteristics of learners, teaching materials, the development of electronic platforms, and the cooperation of relevant professionals. The best results are achieved when various teaching methods are combined to help learners acquire knowledge and skills in the most effective way. It is an opportunity to refine the teaching objectives of the program, the operation of personnel, and the role of teachers to provide more comprehensive and professional teaching. Training, materials, and interactive behaviors encourage students to lead the learning activity, reflect on their performance, and self-regulate their learning. It is also a learning style that is more in line with the characteristics of tourism education. It is not a perfect teaching method, but it has the advantage of complementing traditional teaching methods. Educational game learning can enhance the motivation for learning and improve the effectiveness of tourism education.

The findings of the present study have both theoretical and practical implications. Our results provide empirical evidence that the success of online gamified tourism education may rely on key factors including various teaching methods, systematically organizing the contents, using them to enhance student skill sets, fostering engagement, enhancing immediate feedback for students, and combined creativity. From a practical perspective, it is very important to embed the virtual and tangible aspects into the tourism education curriculum. Nothing is more conducive to a scientific, rational, and vivid experience that will allow students to learn about tourism lecturers. Educational games can amplify the diversity and variability of information that tourism contains. The learning process of learners can enhance the shaping characteristics. These findings will be conducive to improved educational game design. The empirical results also provide guidance to educators in terms of developing strategies that are better suited for online teaching and student learning. It is essential to develop a hospitality management education program that focuses on supporting an extremely diverse audience to function effectively in a dynamic and complex field serving a system as complex as the hospitality industry. A review and development of the utilized Business Game Design helps to acquire in-depth knowledge through the effective transfer of the game content as a pedagogical tool. Future research should investigate topics such as learner motivation, the self-efficacy of students in online

gamified tourism education, and the efficiency of learning in the work situation as well as different types of tourism education models.

### 9.1. Summary of Findings

The study has contributed to the literature by illustrating the methods and processes of designing a MOOC-based gamified course, which could be leveraged for capacity development in the tourism and hospitality sector. It does this by triangulating the game design and pedagogy literature and adapting the models for the specific context. The results of the pre-pilot test provided insights into four areas that can be improved before conducting the pilot version. It has demonstrated that online gamified MOOCs can be designed without much technical and gamification skills, provided that resources are available. The case study reveals that the Moodle platform fulfills many requirements of a gamified online education design perfectly and could therefore be leveraged by course designers from developing countries to increase student motivation and advance learning outcomes without much investment in technology. The course occurred within a standardized framework and was structured with nine distinctions, twenty-six lessons, ten quizzes, three games, five forms, two exams, two forums, and a chat. The nine badges included a 10,000 point level, a 5,000 point level, the completion of a lesson, attending a forum, attending a web activity, and the quiz results: 100%, 90%, and 80-90%. The modules were written as documents and included exercises in the form of fill-in-the-blanks, true or false, and multiple-choice questions, with short, long, and image problems to evaluate learning comprehension. The design of the system database was structured by estimating the contents, which were organized by the division of the content into commercial and free-of-charge. During the design and construction of tourism education content, the model can be further developed and made available to the tourism industry by enrolling in courses that are part of the training offered in tourism, partly to contribute to the quality of the tourism service sector.

### 9.2. Limitations and Future Research

The present study was limited to a particular educational platform used at a university. It is suggested that the application of the model in other platforms can enrich the proposed model. The number of participants involved in the proposed study was small. To ensure the external validity of future results, a larger scale application can be developed. A possible limitation is the educational level of the participants. Despite the proposals and adjustments in the instrument, many questions may present reduced understanding. Future investigations should use the model and carry out an

exploratory factor analysis in similar contexts, such as adults, and with peers that are not domestic tourism businesses. The impact of the satisfaction of the presence of the platform on the participants must be analyzed; adjusting the answers of the online, the classroom, and the webinar is needed to provide direction to the contribution of the research.

Another suggestion regarding validity, control, and random factors includes investigating the presence of the motivational tendencies of the community, including not only university students and professors but also possible other research fields. Finally, the policies and rules affecting the context of the educational populations and the tools used can effectively affect the relationships between the components of the proposed model; the influencing factors of educational platforms and students' performance must be independent. Factors such as the department, instructor, course type, visibility, and course size should be considered. Moreover, the role of gender can shape the results of the proposed study. Therefore, future research should explore the role of gender to effectively interpret the results.

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