La gamificación como estrategia de evaluación bajo el enfoque flipped learning

Gamification as an Evaluation Strategy Under the Flipped Learning Approach

Gamificação como estratégia de avaliação sob a abordagem de aprendizagem invertida

Rubí Estela Morales Salas
Universidad de Guadalajara, México
rubi.morales@suv.udg.mx
https://orcid.org/0000-0003-4133-4712

Resumen

El *flipped learning* como metodología activa en la educación se ha convertido en una de las más usadas por los docentes de todo el mundo. Consiste en un enfoque integral de procesos y estrategias didácticas centradas en mejorar la experiencia de aprendizaje de los estudiantes y aumentar su compromiso e implicación en su propio proceso. Se presenta una experiencia educativa de un curso de estudiantes de posgrado desarrollada durante el primer semestre del 2021 cuyo objetivo fue identificar el nivel de satisfacción respecto a la implementación de la gamificación como estrategia de evaluación bajo el enfoque de *flipped learning*. Se sitúo como una investigación exploratoria, descriptiva-transversal, con un enfoque mixto y un muestreo no probabilístico por conveniencia. Se aplicó una encuesta mediante un cuestionario que consistió en una serie de preguntas. Los resultados muestran que la intervención fomentó la participación y proactividad de los estudiantes, por lo tanto, impulsó el aprendizaje y permitió aprovechar eficientemente el tiempo en el aula.

Palabras clave: aprendizaje invertido, estrategia de evaluación, gamificación, metodologías activas.

Abstract

Flipped learning as an active methodology in education has become one of the most used by teachers around the world. It consists of a comprehensive approach to didactic processes and strategies focused on improving the learning experience of students and increasing their engagement and involvement in their own process. An educational experience of a graduate student course developed during the first semester of 2021 whose objective was to identify the level of satisfaction regarding the implementation of gamification as an assessment strategy under the flipped learning approach is presented. It was situated as an exploratory, descriptive-cross-sectional research, with a mixed approach and a non-probabilistic sampling by convenience. A survey was applied by means of a questionnaire consisting of a series of questions. The results show that the intervention fostered student participation and proactivity, thus boosting learning and allowing efficient use of classroom time.

Keywords: flipped learning, evaluation strategy, gamification, active methodologies.

Resumo

A aprendizagem invertida como metodologia ativa na educação tornou-se uma das mais utilizadas por professores em todo o mundo. Consiste em uma abordagem abrangente dos processos e estratégias de ensino focadas em melhorar a experiência de aprendizagem dos alunos e aumentar seu compromisso e envolvimento em seu próprio processo. Apresenta-se uma experiência educacional de um curso de pós-graduação desenvolvido durante o primeiro semestre de 2021, cujo objetivo foi identificar o nível de satisfação em relação à implementação da gamificação como estratégia de avaliação sob a abordagem de aprendizagem invertida. Situa-se como uma pesquisa exploratória, descritiva e transversal, com abordagem mista e amostragem não probabilística por conveniência. Aplicou-se uma pesquisa por meio de um questionário que consistia em uma série de perguntas. Os resultados mostram que a intervenção promoveu a participação e proatividade dos alunos, portanto, promoveu o aprendizado e permitiu o uso eficiente do tempo em sala de aula.

Palavras-chave: aprendizagem invertida, estratégia de avaliação, gamificação, metodologias ativas.

Introduction

As teachers we often wonder if it is feasible to leave extracurricular tasks to students of any academic level. The answer is yes, because the time in the classroom should be used to clarify doubts and to carry out collaborative work among students, in such a way that it affects the development of soft skills, called soft skills, which involve a mix of attributes. individual, attitudes and social qualities that strengthen the performance of people in a social context. Well, this effective use of time in the classroom, whether online or physical, in which active teaching-learning methodologies are implemented corresponds to flipped learning or inverted learning. This pedagogical approach consists of transferring certain learning processes out of the classroom, or from the presence between the teacher and students, and then take advantage of and maximize other processes that are carried out in face-to-face sessions (or online sessions), such as already mentioned.

Flipped learning is considered an active methodology because it goes beyond just letting students watch a series of videos, but rather consists of a comprehensive approach to teaching processes and strategies focused on improving their learning experience. It combines the instructions with the constructivist method, which allows students to increase their commitment and involvement in their own learning process, because when the teacher designs activities that free up time in class, then student participation is facilitated through questions , solution of doubts, discussions, guided debates, as well as other activities that contribute to the articulation, exploration and application of diverse ideas (Ballesteros, Cabero, Llorente and Morales, 2010; Fernández and Arcos, 2017; Merla and Yáñez, 2016; Vidal , Rivera, Nolla, Morales and Vialart, 2016).

It is important to point out that the concepts of flipped classroom and flipped learning (flipped classroom and flipped learning, respectively) are not synonymous; they are often thought to be the same, however, there are differences between one and the other. The flipped classroom or inverted classroom is a learning strategy that includes online content (video conferences), which can generally be taken outside the classroom or the presence of the teacher, and once said content has been reviewed by the students, it is It has a face-to-face or online session where the topic is discussed, questions and doubts of the participants are answered. At the time of attendance, the interaction between the teacher and the students is more personalized, which is why it lends itself to developing other types of skills, such as the so-called soft skills.

While flipped learning or inverted learning is a pedagogical approach that consists of instructions given to an individual, but within a group learning space; that is, the individual interacts in an interactive and dynamic learning environment through the guidance of the teacher, who seeks to creatively involve students in the subject being addressed. This approach allows teachers to: implement active methodologies in their classrooms (face-to-face or online) and promote a flexible environment (with free spaces and time) where students can interact and reflect on their learning, according to their needs; In addition, it seeks to stimulate self-managed learning in the student and that the activities have an intentional content, directed and available to all students at any time, and lastly, that the teacher provides feedback on the strengths and weaknesses of their activities, always with the intention of generating significant learning. Therefore, for the purposes of this work, the concept of flipped learning will be taken.

As can be seen from the above, this approach has a series of integrated processes. And it is precisely that, when speaking of integrated processes, the practice of learning assessment should be mentioned, the subject of which has not been fully explored. For decades, the mere fact of mentioning the word evaluation caused in students (of all educational levels) a certain fear and uncertainty, since it was immediately associated with evaluations from which they did not know if they would be victorious and through which they went to show what they have learned. Now, according to Loredo (2021), the "evaluation of teaching is the action that turns the teacher's activity into an object of reflection" (p. 7).

The future of the students is to a certain extent in the hands of the teacher, since they determine whether they are suitable or not, whether they are able to perform a task or not. Then, the evaluation is a holistic action and reflection on the part of the teacher, since this cannot be considered one more step in the educational process, but must take into account each and every one of the actions carried out by the students, so that they acquire the expected learning.

In this sense, from the implementation of information and communication technologies (ICT) in the educational field, new forms and innovative means have been opened to develop the evaluation. Previously, the most traditional evaluation consisted of the application of an exam, or in the repetition by the students of what the teacher said; now it is not limited to those actions, but must be accompanied by rubrics designed for the evaluation of products or evidence of learning, whether physical or performance; of tests or digital tests

translated into challenges and challenges, or in the presentation of results from the implementation of projects.

Therefore, evaluation is a process that can be seen from two temporalities: the first, positions both the teacher and the students in the now, in the present of the teaching-learning process by measuring results and achievements; and the second, from a look towards the future, because what is measured can be improved. Therefore, the evaluation of learning offers the student the opportunity to improve their knowledge, skills and abilities, leading to continuous improvement in their learning process. Consequently, reflecting on and documenting successful processes of more reliable evaluation systems and formats, in this case under the flipped learning or inverted learning approach, is a task worth sharing in this time of change.

Importance of evaluating learning

According to Córdoba (2006), when talking about student evaluation, "we are talking at the same time about a series of aspects that go beyond quantitative results through which it is intended to determine how much students have learned" (p. . two). For his part, Earl (2013) maintains that the evaluation is carried out during the learning process, and not at the end of it; He affirms that during the process decisions and adjustments can be made according to the needs of the students, in addition to giving them feedback to improve the experience. While Moreno (2016) says that evaluation, in addition to giving numbers as evidence, can also be used to help students learn more.

From our point of view, the evaluation of learning goes beyond issuing a grade or a judgment by the teacher, but rather it is a key link in the teaching-learning process where both qualitative and quantitative elements intervene and through which collects information to analyze and detect the achievements and needs of students, and thus make joint decisions (teacher and student) to improve learning. In addition, it can be accompanied by various didactic strategies based on the inverted learning or flipped learning approach, through which students take more advantage of their time in the classroom (either online or physically), as well as providing them with sufficient technological load that allows them to enrich their learning experience by managing knowledge with quality.

At present, it is expected that the evaluation has a sense aimed at motivating the student to improve their learning, not to create fear and uncertainty, or to account for the progress that this is having. But it is not enough to just motivate them, it is also expected that

the teacher manages to communicate through timely feedback the achievements and opportunities for improvement that he/she wishes to point out in each of the evidence provided by the student. In this way, the one who evaluates, or the one who promotes the evaluation, when creating the evaluation indicators, must consider that they are comprehensive, that they take into account the sociocultural aspects and the sociopolitical environment where the teaching-learning process is contextualized. , that are continuous and systematic, that is, that they propitiate an evaluation at the beginning, during and at the end of the teaching-learning process.

Another characteristic that is worth mentioning is that the evaluation must be flexible, so it must take into account the different educational contexts, the number of students, the type of learning activities, the levels of complexity, the inclusion of ICT, etc. as well as the learning styles that students have to learn and the possibilities and particular interests of each one.

Authors such as Biggs and Tang (2007) refer that a good evaluation design is of great importance, so they recommend that it must be constructive and faithfully aligned with the learning outcomes that are evaluated. "These tasks must be focused on promoting student learning and must have an intrinsic value that students can recognize, instead of being mere intermediaries to evaluate the achievement of the competence" (Brown, 2015, p. 3).

Gamification as an immediate evaluation strategy

As can be seen, evaluation is a complex process that must be addressed and updated by the actors in the teaching-learning process in a conscious and fair way to meet the student's expectations and what marks the curricular content of the course. Hence, updating the forms of evaluation is due, in addition to generational change, to the inclusion of ICT in teaching practice, since in the last two decades these technologies have revolutionized not only the educational field, but every context of daily life. , labor and professional. Undoubtedly, "ICTs are becoming more and more important in education due to the possibilities they offer" (Morales and Curiel, 2019, p. 39).

In this task of updating the forms of evaluation, the continuous performance of the students in all its variants should be privileged, from short and quick exams to individual and team activities, sequential or playful activities, which promote significant learning and therefore the appropriation competitions. And precisely when we talk about playful activities

we refer to those activities that encourage the student to learn through play, a game that takes place in a formal context, which is currently known as "gamification".

Gamification, according to Alsawaier (2018), is an innovative didactic strategy in which learning is achieved from game dynamics, since these do not constitute a game in themselves, but rather integrate the game to produce certain behaviors according to the educational goals (Pivec and Dziabenko, 2004). Likewise, various authors such as Bodnar, Anastasio, Enszer and Burkey (2016) emphasize the benefits of implementing novel learning methodologies in the educational field in which immediate feedback is offered to students, as well as progress reports and rewards that motivate said learning. achievements (Borrego, Fernández, Blanes and Robles, 2017; Ke, 2014; Pérez and Almela, 2018). When we talk about immediate feedback, it means that, at the end of the playful activity, the student can know, under an effective or quantitative feedback, its result.

For his part, Teixes (2017) refers that gamification is based on a design centered on people, instead of focusing on functions and results; it is to design pleasant learning activities that help to achieve objectives and that motivate to continue working on it because they capture the emotions.

Hence, it is motivating for the student when it is part of these active methodologies, where the game emphasizes the reinforcement of learning, in addition to promoting the development of digital skills, because if the gamification is mediated by ICT, then the student he feels even more attracted to making them a daily and almost inevitable use.

Objective

El objetivo de esta investigación fue identificar el nivel de satisfacción de los estudiantes respecto a la implementación de la gamificación como estrategia de evaluación bajo el enfoque de flipped learning.

Methodology

It was positioned as an exploratory, descriptive-cross-sectional research, with a mixed approach. According to Danhke (1989), descriptive studies aim to measure or collect information independently or jointly on the concepts or variables to which they refer. It was cross-sectional, because data was collected in a single moment, whose purpose was to describe variables and analyze their incidence and interrelation at a given moment

(Hernández, Fernández and Baptista, 2014). The mixed approach was considered because the learning experience of an online class session was described and subsequently the students involved were asked to answer a questionnaire to identify the level of satisfaction with respect to the strategy used in said session.

Context

The study consisted of describing the learning experience of an online class session applied to a group of 38 students who were in the third semester of a postgraduate degree in Business Administration at a university in Western Mexico. It was carried out during the first semester of 2021, when educational activities were still online, due to the coronavirus disease (COVID-19) pandemic. This situation undoubtedly led to drastic changes in the way of teaching, therefore, in the way of evaluating. In this session the topic was presented: "Analysis and planning of human resources in an organization".

A time of three hours was available for the online session. During this period, it was primarily sought that, in addition to changing the failure results, the students remained active through collaborative work and took responsibility for their learning. It is clarified that, in normal situations, that is, when the session was face-to-face, the subject was cleared up in five hours. At the end of the session, the teacher applied a quick exam to the students, with 10 open questions, whose records from previous semesters (2018 A and B and 2019 A and B) yielded unfavorable results in the grades, since most of the students students failed the exam, which suggested that they did not appropriate the knowledge (since they did not have another form of evaluation, there was no way to refute the above); This caused both the teacher who taught the subject and his students to feel discouraged with the results.

A non-probabilistic sampling was used for convenience, taking into account the ease of access, the availability of people to be part of it, in a given time interval or any other practical specification of a particular element. It is selected based on the convenience and usefulness of the researcher (Kinnear and Taylor, 1998, p. 406). That said, 100% of the students in the group were taken, that is, 38.

Technique and instruments

Gamification was applied to the students as an immediate evaluation strategy under the flipped learning approach. After this, the students were asked to answer a questionnaire (previously designed in Google Forms by the teacher), through which the level of satisfaction of the students with respect to the strategy used in the online session was identified. It was made up of six questions: from one to five they were answered with a Likert-type scale from 1 to 5, where 1 = Not satisfactory, 2 = Not very satisfactory, 3 = Satisfactory, 4 = Very satisfactory and 5 = Excellent. Question six consisted of selecting the answer from among four options. Table 1 below shows the structure of the questionnaire.

Table 1. Structure of the questionnaire. Student perception

| Núm. de pregunta	Preguntas del cuestionario
1	¿Considera usted que el objetivo de la sesión se cumplió con la información recibida?
2	¿Cómo consideras el tiempo que duró la sesión?
3	¿Qué tan satisfecho quedaste con la aplicación de la gamificación como estrategia para evaluar tu aprendizaje?
4	¿Consideras que aprendiste con la aplicación de la estrategia didáctica aplicada en la clase?
5	Responda en qué grado se aplicaron en clase los siguientes atributos:
	a) La sesión es muy dinámica.
	b) Se aprovecha el tiempo al máximo.
	c) Se puede aplicar lo que vamos aprendiendo.
	d) Conocimientos recientes al momento de contestar el cuestionario.
	e) El trabajo en equipo ayuda a socializar y reforzar aprendizajes. *f)* El cuestionario se presenta como un juego que nos invita al reto y nos motiva. *g)* Resulta muy satisfactorio cuando vemos nuestros resultados de manera inmediata. *h)* Se pueden aplicar los aprendizajes adquiridos en futuros proyectos.

	i) El reto de contestar un cuestionario nos mantiene atentos a la exposición del maestro. *j)* Esta forma de impartir clases fortalece la autogestión de aprendizaje. *k)* La evaluación es responsabilidad de nosotros, no del docente.
6	¿Qué medio utilizaste para contestar el cuestionario en Quizizz?
	a) Celular *b)* Tablet *c)* Laptop *d)* PC

Source: self made

For the analysis of the statistical data, various tables and graphs were used to help obtain the results.

Procedure to implement Gamification

1. To implement gamification as an evaluation strategy, the teacher used the Quizizz application. This is an online, interactive and playful application to create personalized exam-type questions, where the student is provided with an access code and from their mobile device or a personal computer they can answer the questions. You can also take advantage of the templates it offers and customize other activities, such as the exhibition through predetermined sheets in said application.

2. The teacher took advantage of the benefits of this application in its free version, so he created a presentation to teach the subject using the templates that Quizizz offers through the "Create a new lesson" option, as can be seen in figure 1.

Figure 1. Create a new lesson in Quizizz
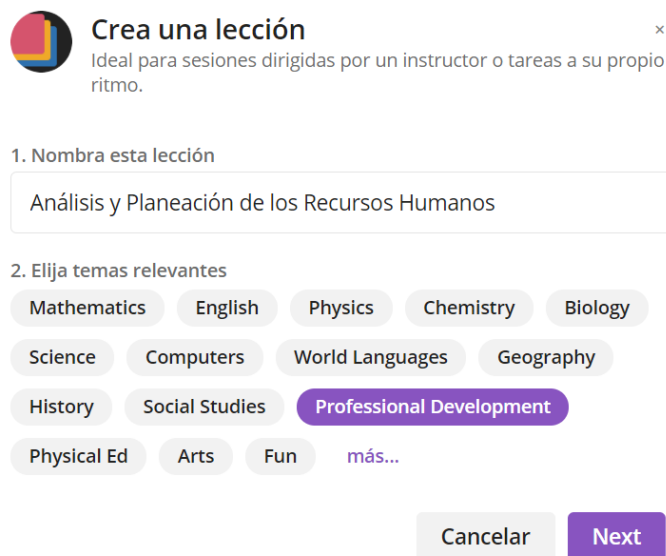
Source: *Quizizz.com*

3. The teacher designed the presentation of the topic in Quizizz, following the basic principles recommended so that it would be attractive, taking into account elements such as: simplified text, ordered and sequential content, quality and copyright-free images, harmony in the design and elements of each slide, among other features.

4. The teacher included in his presentation, in addition to the information on the topic, a series of collaborative activities that the students had to do at some point in the session, such as answering the questions in the questionnaire. Thus, the teacher exposed the information through various slides and with a limited time; then, by means of a pause and in another slide, it was specified that the students either had to carry out a collaborative activity, or they had to answer a question regarding the topic. The one who answered the fastest and most assertively was placed on the winners' podium, an action that motivated the students, since they faced a challenge. Next, figures 2 and 3 show the design that the teacher gave to the presentation.

Figure 2. presentation design
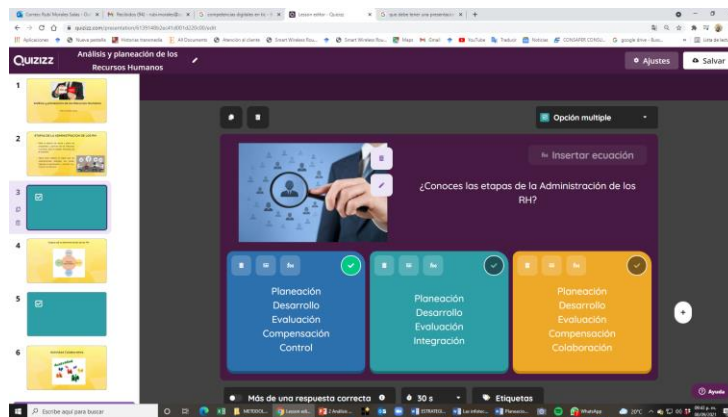

Source: *Quizizz.com*

Figure 3. Sheet with information that the teacher exposes

Source: *Quizizz.com*

Figure 4 shows a slide that contains a question to be answered by the students, this appeared after the topic presented by the teacher. The fact that the students had the opportunity to answer the questionnaire immediately contributed, first, to their being attentive to the subject exposed by the teacher, and second, since the knowledge was recent at the time of answering the question, this undoubtedly helped. that the disapproval of previous semesters decreased, without failing to comment that the learning experience became playful.

Figure 4. *Slide* with quiz question

Source: *Quizizz.com*

Figure 5 shows the collaborative work that the students carried out by team. For this activity, the teacher created work rooms on the Zoom platform (because it was an online class) taking into account the number of teams. To do this, he gave instructions to each of the teams and indicated the time that the activity should last.

Figure 5. Sheet that indicates collaborative activity to be carried out in work teams

Source: *Quizizz.com*

5. After the collaborative activity, the teacher resumed the presentation through the projection of another slide. When he finished his presentation, the students answered another question from the questionnaire. This procedure continued until the topic was exhausted and the students answered all the questions in the questionnaire. Quizizz produced a report summarizing the results of each student's quiz. The students who finished in the first three places expressed emotion.

6. At the end of the online session, the teacher provided a link to the students so that they could answer the questionnaire whose purpose was to identify the level of satisfaction of the students with respect to the strategy used in the online session.

Results

From the implementation of gamification as an evaluation strategy

From this procedure, results are obtained that obey the perception of the students regarding the implementation of gamification as an immediate evaluation strategy, under the flipped learning approach. The teacher gave the online session through the Zoom videoconferencing platform, which allowed the Quizizz application page to be projected, which served as the main means to present, work in teams and for students to take the questionnaire. The teacher took advantage of the templates of this application to achieve a novel design to expose the information on the subject, in addition to combining collaborative activities (those carried out through the Zoom rooms) and at the same time answering several questions of the questionnaire that were presented. throughout the teacher's presentation, which served to assess student learning immediately.

The evaluation of the learning was not only achieved through the questionnaire in Quizizz, but the collaborative activities carried out by eight work teams (seven teams made up of five members and one team made up of three) also contributed to the evaluation. Through these, the students demonstrated the application of concepts, the capacity for analysis and argumentation and the projection of the application in real life cases.

The students were enthusiastic when answering the questions in the questionnaire, since they assumed it as a challenge, in addition to the fact that the application provides an attractive interface, and that is something that the new generations approve of, perhaps because they are connected through of smart digital devices as long as possible.

From the perception of the students

At the end of the session, the teacher applied a questionnaire to all the students (38) to find out their perception regarding the implementation of the didactic strategy in general, as well as the use of gamification as an immediate evaluation strategy. Table 2 shows the results related to questions one to four.

**Table 2**. Results of questions 1 to 4

Núm. de pregunta	No Satisfactorio (1)	Poco satisfactorio (2)	Satisfactorio (3)	Muy satisfactorio (4)	% total alumnos	Excelente (5)	% total alumnos
1				3	7.9	35	92.1
2				2	5.3	36	94.7
3				2	5.3	36	94.7
4				1	2.6	37	97.4

Source: self made

It can be seen that the general tendencies of the responses are located between scale four and five, the latter (Excellent) being the predominant one. The results for each question are detailed below.

They were asked if the objective of the session had been met with the information received. Of 38 students, 35 answered "Excellent", and three answered "Very satisfactory". This means that for 92% of the participants the objective of the session was met in an excellent way, as shown in Figure 6.
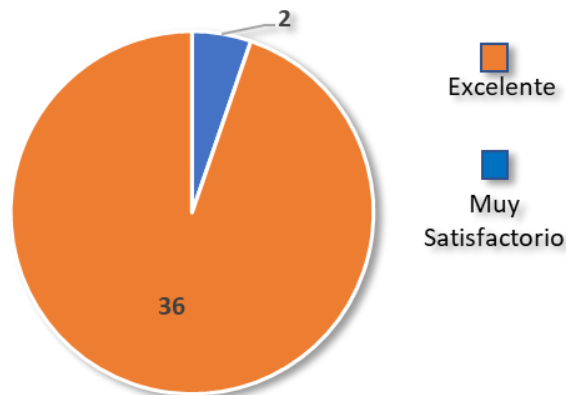
Figure 6. The objective of the session was fulfilled with the information received
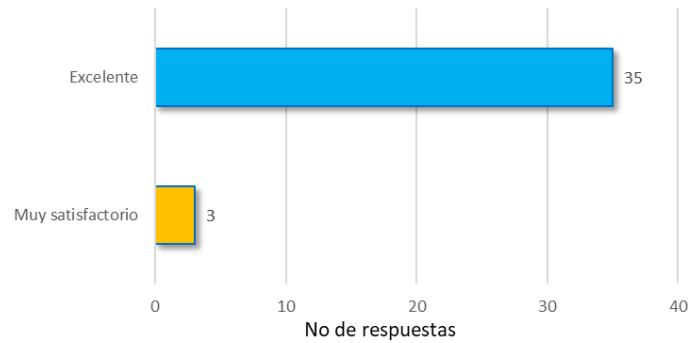
Source: self made

In question two, 95% of the students responded that the time the session lasted was excellent, in addition to the fact that in the face-to-face comments they said they had used it very productively (see Figure 7).

Figure 7. Time the session lasted

Source: self made

Regarding question three, they were asked how satisfied they were with the application of gamification as a strategy to assess their learning. In this regard, 95% said they felt "Excellent"; the rest said they felt "Very satisfied". This response reflects a convincing result when gamification is applied as an evaluation strategy under the flipped classroom approach, and shows that students prefer to answer the questionnaire with "recent" knowledge (see Figure 8). In addition, interspersing activities (that is, teacher presentation, teamwork and gamification) allows them to reinforce what they have learned, be active subjects of their learning and, therefore, of their evaluation.

Figure 8. Student satisfaction with the application of gamification as a strategy to assess learning
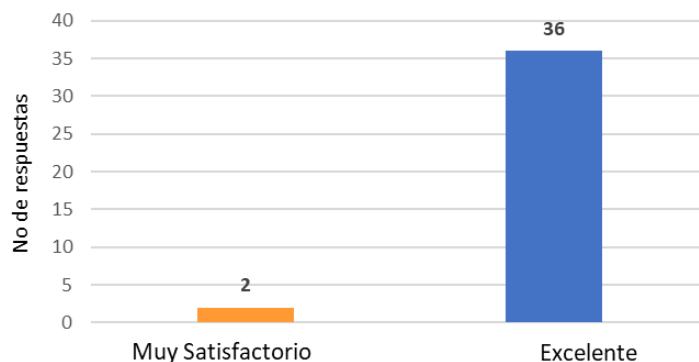
Source: self made

Figure 9 shows the result obtained after asking how much they perceive that they learned in general, with the application of the didactic strategy. The vast majority, that is, 98%, said they felt "Excellent", while only 2% said they felt "Very satisfied".

Figure 9. Learning obtained with the application of the didactic strategy
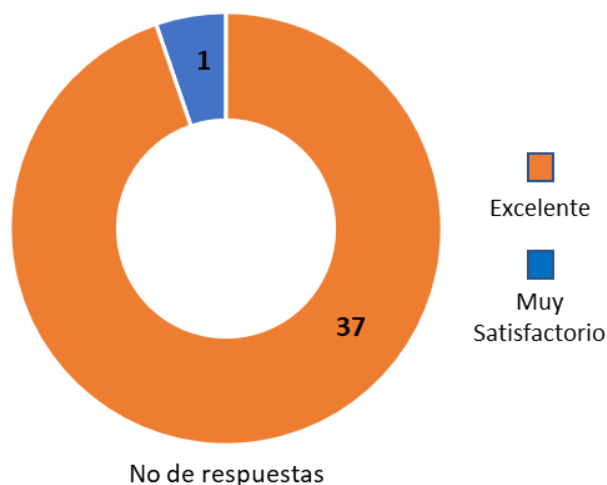
Source: self made

The answers obtained from question five had to do with the degree to which the students perceived that the attributes described in the corresponding section of table 1 were applied in the class session. These answers are shown in table 3.

Table 3. Results of question five

Atributo	No satisfactorio (1)	Poco satisfactorio (2)	Satisfactorio (3)	% total alumnos	Muy satisfactorio (4)	% total alumnos	Excelente (5)	% total alumnos
a)					4	10.5	34	89.5
b)			1	2.6	4	10.5	33	86.8
c)			2	5.3	6	15.8	30	78.9
d)					2	5.3	36	94.7
e)					6	15.8	32	84.2
f)					1	2.6	37	97.4
g)			1	2.6	3	7.9	34	89.5
h)			3	7.9	4	10.5	31	81.6
i)					2	5.3	36	94.7
j)			3	7.9	5	13.2	30	78.9
k)					2	5.3	36	94.7

Source: self made

It can be seen that the responses are located between the "Satisfactory" scale and the "Excellent" scale, with the latter predominating. Regarding attributes a) and b), which respond to dynamic session and use of time, the majority said that it was "Excellent", 90% and 87%, respectively. These answers generate confidence in the teacher regarding the application of the strategy, as well as the times that he determined to successfully carry out the class session.

In addition to this, 79% of the students said "Excellent" regarding the application of knowledge immediately (attribute c)), 16% said it was "Very satisfactory" and only 5% (two students) placed their answers in "Satisfactory". In relation to attribute d), the majority of the students (95% =36) placed their answers in "Excellent". This response determines that students have the confidence to apply knowledge immediately, in addition to having recent information to answer the questionnaire that assesses their learning. These percentages go hand in hand with the response to attribute f), which consists in the fact that the questionnaire is presented as a game that invites the challenge and motivates the students, in which 37 students, that is, 97%, located their answers in "Excellent".

Returning to attribute e), which has to do with the collaborative activities that the teacher invites them to carry out interspersed with the presentation, 84% of the students (that is, 32 participants) said that these were "Excellent"; while six students placed their answers in "Very satisfactory". In a personal way, the teacher asked the students who gave these answers what had been the reason for them, to which they replied that the activities were very good, however, it was difficult for them to do teamwork due to the lack of familiarity that they had with the Zoom platform, others said that their internet connection was not very efficient, causing them to lose communication with their teammates.

When carrying out the collaborative activities, 82% of the students (that is, 31 of them) stated that the knowledge can be applied in future projects (attribute h)), while seven students placed their answers between "Satisfactory" and "Very good". satisfying". Undoubtedly, these results encourage the development of projects that can be applied in real contexts to solve real problems.

More than 90% of the students considered "Excellent" that the results of their evaluation through the questionnaire in Quizizz were immediate (attribute g)). In addition, the challenge of answering it kept them attentive to the teacher's presentation (attribute i)). The results of the questionnaire directly impacted the approval of the students.

Regarding attribute j), which responds to the way of teaching classes to strengthen self-management of learning, 30 students (79%) ranked their response as "Excellent", while five students (13%) ranked it as "very satisfactory". " and only three students (8%) selected the "Satisfactory" scale. Undoubtedly, the result again demonstrates to the teacher that the strategy applied in a general way, where in addition to presenting, students are asked to carry out collaborative activities and answer a questionnaire to evaluate their learning, strengthens their teaching practice under the learning approach. inverted or flipped learning.

Through the moderate use of technologies and digital teaching resources, students can assume that the evaluation is their responsibility and not the teacher's, as shown in the response of attribute k), with a high percentage (95%) that is located on the "Excellent" scale. They expressed out loud that they did not feel pressured when answering the questions of the questionnaire, this part, without a doubt, has to do with transforming formal learning into something playful, a condition that gamification grants.

In the sixth and last question of the questionnaire, they were asked which medium they used to answer the Quizizz questionnaire: the largest device used was the cell phone (17

students), followed by the laptop (12 students), the PC (six students) and , in last place, the tablet, with a total of 3 students who used it, as shown in Figure 5.

Figure 10. Digital medium used to answer the questionnaire in Quizizz
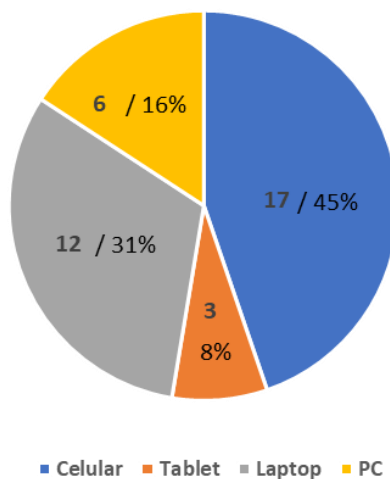
Source: self made

Discussion

Applying gamification to assess learning from the flipped learning or flipped learning approach enhances students' skills both in the classroom (online or physical) and in extraclass work. The fact that students feel responsible for focusing their attention on what the teacher exposes and that they also apply what is exposed in interactive activities through self-directed work teams undoubtedly favors the evaluation of their learning, in this case the questionnaire applied in a playful represents an opportunity to encourage their real and conscious participation in the self-management of their learning.

This reminds teachers that an effective evaluation has to do not only with the student answering all the questions in an exam assertively, but also with a planned teaching-learning process, with a selection of effective and pertinent teaching strategies for the context and the type of students with which the teacher deals, in addition to having teaching resources that are consistent with the learning activities.

In the description of this learning experience, the application of novel didactic strategies by the teacher is highlighted, which strengthen the process of educational practice, including the evaluation of learning, especially if he makes an effective and moderate use of the tools. ICT, which when taken to an educational learning context become learning and

knowledge technologies (TAC), and later, when socialized in social networks (where attendance is not necessary), become empowerment and participation technologies (TEP) (Morales y Rodríguez, 2020, pp. 26-27).

In general, and according to live voice comments from the students whose answers to the applied questionnaire were located on the "Satisfactory" scale, it is important to point out that this result is due to problems with the Internet connection, to the lack of familiarity with the Zoom platform and even the lack of digital skills used for this type of context. In this sense, it is recommended that at all times the teacher takes into account technological, didactic, media and resource aspects, as well as the digital skills that the participants have, in order to achieve a successful implementation of this type of active methodologies. Methodologies that in the last decade have become not only the passport to achieve successful professional development, but also a priority issue as a permanent inclusion of ICT in academic programs, since "degrees and training programs must be according to the skills demanded by the market, since finding a job has become a complicated and competitive process" (Infante, Infante and Gallardo, 2021, p. 147).

It stands out that most students feel motivated to have class sessions (either online or in a physical classroom), such as the one written in this article, where the teacher is not the center, but assumes minimal intervention and focuses on the student learning and assessment.

The collaboration that is sought among students from flipped learning, as well as the exchange of ideas based on work and professional experience, is a positive practice, through which it is expected to strengthen knowledge so that, if possible, can apply to projects that help solve a problem in the professional field or in real life.

Conclusions

It is essential that those involved in higher education teaching practice rethink new ways and methods to assess learning, highlighting fair and equitable reflection by the teacher in the use and application of assessment instruments adapted according to the multiple activities of learning designed so that, when executed by the students, they demonstrate the relevant knowledge, abilities and skills.

The methodology applied in this communication helped to identify the level of student satisfaction regarding the implementation of gamification as an evaluation strategy under the flipped learning approach in the reference course. The participants stated that including gamification as an evaluation strategy reduced their stress and at the same time

kept them alert and attentive throughout the class session, which allowed them to collaborate with their peers in a dynamic and purposeful way. Certainly, it is necessary to continue investigating those digital and non-digital tools that encourage the fair evaluation of meaningful learning, without losing sight of the fact that what strengthens the development of student competences must be evaluated, not only in disciplinary and technical aspects, but also in regards to the digital context and communication and collaboration skills.

Future lines of research

From the research carried out, other topics of interest arise that can be addressed in the future, such as the implementation of instructional design for updating academic courses where assessment strategies with ICT are included, as well as the implementation of active methodologies that mobilize students. students for skills development.

In addition to the above, it is necessary to make a deeper inquiry to the teachers regarding how they feel with the application of this type of evaluation strategies and if they are really qualified to apply them or if they present any difficulty in doing so and what actions they have implemented to get them down. Undoubtedly, it would lead to the creation of strategies for teacher training and updating in digital skills, in addition to strengthening their knowledge about active methodologies that are feasible to apply in their educational contexts and that in these moments of adaptation and change are essential in teaching practice.

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