Application of virtual workshops for formative evaluation in higher education

Aplicación de talleres virtuales para evaluación formativa en educación superior

Desiré García-Lázaro[1], Miguel Ángel Marcos-Calvo[1],
Raquel Garrido-Abia[1]

[1] Universidad Rey Juan Carlos, Spain

desire.garcia@urjc.es , miguel.marcos@urjc.es , raquel.garrido@urjc.es

ABSTRACT. An effective evaluation system should not be limited to measuring performance with numerical grades, but should take into account each student's starting point and progress. This research aims to explore the use of technological tools to implement formative assessment with self-assessment and peer assessment in a virtual learning environment. To do so, a mixed methodology is applied that includes case analysis and the design of an ad hoc questionnaire with a Cronbach's alpha reliability coefficient of 0.7. The Moodle virtual workshop is used to carry out a pre-experimental design (N=103). The results reveal an improvement in understanding of the topic and academic performance. In conclusion, an effective evaluation system is fundamental to academic success, with formative assessment being a viable alternative for improving learning and measuring the acquisition of competencies.

RESUMEN. Un sistema de evaluación eficaz no debe limitarse a medir el rendimiento con notas numéricas, sino que debe tener en cuenta el punto de partida y el progreso de cada estudiante. Esta investigación tiene como objetivo explorar el uso de herramientas tecnológicas para implementar una evaluación formativa con autoevaluación y evaluación entre pares en un entorno virtual de aprendizaje. Para ello, se aplica una metodología mixta que incluye análisis de casos y el diseño de un cuestionario ad hoc con un coeficiente de confiabilidad Alpha de Cronbach de 0,7. Para llevarlo a cabo se utiliza el taller virtual de Moodle en un diseño preexperimental (N=103). Los resultados revelan que se mejora la comprensión del tema y el rendimiento académico. En conclusión, un sistema de evaluación efectivo es fundamental para el éxito académico, siendo la evaluación formativa una alternativa viable para mejorar el aprendizaje y medir la adquisición de competencias.

KEYWORDS: Formative assessment, Peer assessment, Virtual workshop, Higher education, Assessment for learning.

PALABRAS CLAVE: Evaluación formativa, Evaluación entre pares, Taller virtual, Educación superior, Evaluación para el aprendizaje.

1. Introduction

Formative assessment has gained increasing importance at all levels of education, including university. Unlike purely evaluative assessment, it is conducted throughout the learning process to provide feedback to students and improve their performance, allowing them to understand their strengths and weaknesses and monitor their progress towards learning objectives. According to Cruzado Saldaña (2022), its purpose is to promote in them a responsible and conscious learning process with the help of teachers, who can plan the educational process in an organized manner.

In formative assessment, feedback is a means to an end, which is to identify strengths and weaknesses in the learning process and plan the next stage. According to Hattie and Timperley (2007), "formative feedback is one of the most effective methods for improving student learning" (p. 81), as it helps them not only identify and correct errors in real time but also better understand learning objectives and monitor their own progress towards achieving them. Similarly, it also allows educators to improve their work by identifying their strengths and weaknesses, readjusting objectives and procedures, and correcting mistakes.

Peer assessment is another element that can be used in good formative assessment (Ibarra-Sáiz et al., 2012), and it can help university students learn collaboratively and develop critical thinking and analysis skills from different perspectives. This technique can also foster their responsibility and autonomy, as it allows them to be both evaluators and evaluated, improving their ability to give and receive constructive feedback. With peer assessment, they can learn collaboratively and build a stronger learning community, discussing among themselves and gaining different perspectives on the same topic. This allows them to better understand the material and improve their critical thinking and analysis skills from different approaches, fostering their responsibility and autonomy. In summary, peer assessment not only has a positive impact on academic performance but also fosters valuable social and emotional skills for success in the future (del Mar Sánchez-Vera & Prendes-Espinosa, 2015).

When applied in quantitative subjects such as mathematics, its use fosters the responsibility and commitment of students to their own learning, improving their ability to solve problems and analyze mathematical concepts effectively. As stated in Delgado, Medina, and Delgado (2020), with peer assessment, the student can improve their academic performance while developing interpersonal skills, such as empathy and the ability to self-evaluate and evaluate their peers. Additionally, it promotes confidence and communication, which in turn can improve the understanding of content and dynamics in the study group.

Finally, following Hevia and Fueyo (2018), the use of digital devices and the new places where knowledge is housed have transformed the way students access and process information. Therefore, when this type of assessment is used through a virtual environment, with the appropriate tools available, the peer assessment process can even save time for the teacher, who can delegate part of their task to the students, reducing subjectivity and guaranteeing a fairer evaluation in many cases. Ultimately, it is about improving academic performance and making use of a more collective approach to learning.

2. Literature review

Defining the assessment is not an easy task. Often each teacher conceptualizes it with a different meaning, and in addition, the instruments used, and, above all, their intentions are very diverse. It thus becomes a more complex field than it seems at first sight, given that it "serves both to accredit and make value judgements and to diagnose, provide feedback, reflect, regulate and improve learning" (Anijovich & González, 2011).

To start talking about assessment, one must necessarily mention how it differs from grading. Despite the literature on the subject, both scientific and popular (Alonso et al., 1996; Álvarez, 2011; Hortigüela et al., 2019), it is common to find that there is much confusion regarding both terms, as they can be considered as synonyms. Assessing is a broader process than grading, which simply establishes a numerical grade at the end of the process, and where the learning actually acquired does not have to be verified (Aranda et al., 2013).

On the other hand, with a good assessment process from the beginning, it is possible to collect information about what a student has done, interpret it and make decisions (not at the end of the process, but during it) with the implicit possibility of improvement.

At university, it is common to offer students isolated grades, the result of a single test that is often just a rote test, without any explanation of the criteria used (Hortigüela et al., 2015). Instead, assessment should be unequivocally associated with learning (Hortigüela et al., 2019) and, to this end, it must be endowed with intentionality. It can act as a revulsive element as long as it is fully integrated into the process, playing a key role for students (Álvarez, 2011; Anijovich & González, 2011; Brown, 2015a; Brown, 2015b; Hamodi et al., 2015; Ibarra-Saiz & Rodriguez-Gómez, 2020; Sanmartí, 2007). In short, a good assessment should imply action for improvement, whereas a grade is merely a ranking. Therefore, one of the major differences between the two is that it is not known whether a student learns in a marking process, but he or she certainly learns in an assessment process. It is important to keep in mind that sometimes less is more, and fewer but more meaningful assessment activities may result in a better outcome (Calkins et al., 2018).

If students become part of this process, and begin to receive feedback, assessment can become a regulator of learning and thus an educational tool. The key is to foster students' capacity for autonomous and adaptive learning (Coertjens et al., 2017). Here is where formative assessment comes in, the purpose of which is not to qualify, but rather to incorporate a search for evidence that demonstrates what has been achieved and what the shortcomings are, focusing on opportunities for improvement. This term, which has been in use for more than 50 years, arises in contrast to what is known as summative assessment, based on marking. This assessment is only a measure that is supposedly used to find out what students know and is used to establish a ranking in order to certify this learning (Anijovich & González, 2011).

As stated by Álvarez (2011), assessing with formative intention cannot be equated with measuring, grading, classifying, or examining. It is related to these activities, and shares their semantic field, but cannot be confused with them, as the resources used are different, as well as the purposes for which they are used. As Brown (2015) notes, it is feedback-intensive, as well as formative and informative, being primarily concerned with providing guidance aimed at improving student work.

Many studies argue that for assessment to be truly formative, the student must be engaged in it (Andrade & Brookhart, 2016; Anijovich, 2017; Anijovich & González, 2011; Aranda et al., 2013; Fraile et al., 2020; Hamodi et al., 2015; Hortigüela et al., 2015; Hortigüela et al., 2019). Previous mistakes that students may have made must be considered, as it is through them that we are aware of what the student understands, what they do not understand and what strategies they are using (Anijovich & González, 2011).

Formative assessment must be conceived as an accompanying process (Fraile et al., 2020). It consists of providing sufficient information for the teacher to be aware of the student's improvement process, and in turn for the student to improve his or her performance, allowing the necessary adjustments to be made. It bases its implementation on providing clear and concrete criteria, facilitating feedback and allowing work to be reviewed and improved, thus providing an opportunity to self-regulate learning (Wiliam, 2011; Andrade & Brookhart, 2016).

Achieving this formative assessment to foster or strengthen knowledge is a challenge for the educational community, and it is necessary for students to learn how to assess. They know if they have learned when they are able to assess their learning (self-assessment). According to Sadler (2010), for truly formative assessment to take place, students need experience in decision-making, quality examples and the possibility to engage with the teacher and other students. This includes motivating them, providing them with opportunities to know about their performance, to know their mistakes and be able to improve them, and to have a measure of their performance.

Another aspect that cannot be forgotten is being immersed in technological environments. A new challenge is using digital tools for assessment. Little attention has been paid to understanding the role that their use can play in assisting the process (Ibarra-Saiz & Rodriguez-Gómez, 2020). Therefore, these authors point out that the challenge is to provide them with "new decision-making opportunities, including participatory modalities (self- and peer-assessment), to develop their assessment judgement and thus enhance self-regulation and lifelong learning".

It should be noted that self-assessment is the evaluation of the knowledge acquired or the work carried out, judging one's own performance. There is also much literature on the subject, as noted by Kambourova et al. (2021), that provides an exhaustive state of the art on the subject from its origins, focusing on the literature published between 2006 and 2020. As they rightly point out, it is curious that "university institutions and teachers have to carry out self-assessment in order to be accredited, while the same is not required of students, except sporadically and voluntarily" (p. 219). This is a far cry from what is also known as self-grading, which is quantitative, asking the student to assign a mark, without any prior reflection (Fraile et al., 2018). These authors also point out that its use would, moreover, run counter to formative assessment and could lead in many cases to overestimation of their abilities. Therefore, its objective should be to identify what they know and what they need to learn, and to know what aspects they need to reinforce in their study, identifying their strengths and weaknesses.

For the teacher, student self-assessment is a doubly positive tool, as it provides feedback on the student's learning progress and is also a way of getting feedback on his or her work and teaching effectiveness.

As Hattie (2008) states, another of the most influential factors in academic performance is feedback, understood as the information students receive about what they know and what they still need to work on. Our role here is to give them guidance to overcome the part of learning that they have not yet acquired. However, it can also be done among peers, if it is included in the assessment process. This is known as peer assessment, where students assess the learning process of a peer or group of peers, and the tasks to be assessed must be relevant, have transparent criteria (Ibarra-Sáiz et al., 2012), and be clearly designed and explained prior to assessment (del Mar Sánchez-Vera & Prendes-Espinosa, 2015). This is useful for them to develop the ability to self-regulate their learning and to make decisions about what they have done (Panadero & Broadbent, 2018). Equally important is to be aware of their limitations, which will arise when they are not prepared to assess each other (Brown, 2015). In the case where the assessors are not known, i.e., if they do not know by whom they have been assessed, it is called a blind peer review. Its benefits are evident as it helps them learn to make accurate estimates of the quality of the work they are producing, while they are producing it (Brown, 2015).

Therefore, before implementing these processes in the classroom, it is necessary to explain and train them in how it is done, why it is done and what the objective is. In addition, when students are involved, it is necessary to work out how to give them feedback so as not to "hurt the feelings, self-esteem, and ego" of the person being assessed. It should not be forgotten that they play a dual role, as they take on the role of the teacher, having to be completely objective, assessing a peer and disregarding the affective-emotional component. On the other hand, they are assessed by another student, expecting to receive the same objectivity. The teacher remains in the background, observing and giving guidance on the feedback criteria being given, as well as arbitrating possible conflicts.

Peer review, by its very nature, allows for double feedback. While applying the assessment criteria, the assessor can observe how another peer performs the task in a different way from his/her own, allowing him/her, by comparison, to be aware of the deviations between those tasks and his/her own work, generating again a process of self-assessment. In addition, this method increases their responsibility because they take on the role of the teacher, which usually implies an increase in their intrinsic motivation in the teaching and learning process.

From the teachers' point of view, the implementation of this type of assessment may give the false sense of

saving time, as the reality is that it requires them to be very attentive to each of the assessments made by the students. In other words, even the smallest detail must be controlled so that the process is carried out objectively and learning is truly meaningful. There is nothing more dangerous than a bad learning, because of the need to identify and eliminate it. Therefore, in order to develop the assessment in an objective way, it is advisable to emphasize the importance of not including affective or emotional components in the assessment, but rather purely rational components linked to the concepts to be covered. Thus, having this knowledge would have a positive effect on the role of both the assessor, by being able to give guidance, and the recipient of the assessment, by being able to reflect on these assessments with judgement.

Having highlighted the need to include formative assessment in the teaching-learning process in higher education, the following is an experience of application, together with its assessment, through the use of peer assessment developed thanks to the availability of appropriate tools (Virtual Workshop) hosted in the Virtual Classroom.

3. Methods

The methodology used aims to go beyond the description of what happened and to find out the reason behind the results achieved, and therefore the case study is applied to discover the existence of cause-effect relationships. The sampling applied is a casual or purposive non-probability sampling. Specifically, the group is made up of 103 students belonging to the Degree in Marketing (90.29%) and the Double Degree in Tourism and Marketing (9.70%) of the Madrid Campus of the Rey Juan Carlos University, Madrid, Spain. The participating students are aged between 18 and 25, with a predominance of women (69.90%) as compared to men (30.09%). It is important to note that 30% of students work and study at the same time, however this is not decisive. The academic year in which this pre-experimental type of educational intervention is being developed is 2020-2021, a hybrid course combining face-to-face and virtual teaching on Covid-19.

The tool used to carry out this experience is the Moodle Virtual Workshop (VW) available in the Virtual Classroom of the Rey Juan Carlos University. The VW allows a formative assessment process to be carried out in large groups as it facilitates the simultaneous management of the delivery, assessment, and result obtained from any programmed activity. The configuration of the VW is the task of the teacher on the basis of the objectives pursued, as it is possible to assess the tasks submitted on the basis of scores, rubrics, or weightings. Thus, it is necessary to clearly and simply define the objectives to be pursued, taking into account the deadlines for the delivery of the proposed activities. At the end of the course, a questionnaire is given to students to collect information about their capacity for adaptation and autonomous learning, their degree of maturity in the development of academic tasks, their ability in learning to learn, as well as their assessment of the proposed workshops. All this to have feedback on the implementation of the process, student satisfaction, the usefulness of the workshops in assessing their learning and the decision-making of the students as assessors. The questionnaire contains Likert scale questions with values between 1 and 5, dichotomous and open questions, and an internal consistency of 0.7 according to Cronbach's Alpha (Tavakol & Dennick, 2011).

During the academic year 2020-2021, in order to achieve the objectives of a formative assessment, the teaching team implements the proposal with two key stages: peer assessment (workshops) and self-assessment (as a posteriori reflection). Specifically, the workshops were proposed to the students as a voluntary activity as there is a common educational guide which is compulsory for all the teachers of the subject and which limits the possibilities of changes, for example, in the assessment. This implies, in practice, that student participation in the activities is voluntary and does not count towards the final grade. They are carried out in three phases established in time by the teaching staff: a first stage developing the activity individually and reflexively assessing its performance (initial self-assessment) and ending with the delivery of the activity (VW). The second phase is peer assessment with peer feedback and, finally, a third phase of collecting, analyzing and reflecting on the information through their participation in formative assessment in their dual role as assesses and assessor. In other words, they not only receive feedback from their peers, but at the same time are aware of the assessments that have already been carried out (teaching role). With all of this, in this third phase the students finish shaping

their assessment judgement, being able to assess their own learning on an objective basis.

Specifically, the development consisted of student participation in five workshops with the same content as the thematic blocks included in the subject of Statistics Applied to Marketing (see Table 1).

Table 1 shows the proposed workshops, according to these contents.

Proposed workshops	Contents of the teaching guide for the subject
Workshop 1. One-dimensional variable	Frequency distributions Central and non-central location and absolute and relative dispersion measures (Topic 2-3)
Workshop 2. Two-dimensional distribution	Correlation and contingency tables Marginal and conditional distributions Statistical dependence (Items 3 to 5)
Workshop 3. Measures of representativeness	
Workshop 4. Two-dimensional	
Workshop 5. Probability	Probability and Statistical Inference (Topic 6 to 8)

Table 1. Contents of the Virtual Workshops proposed in the course. Source: Self-made.

The following are some operational questions on the development of the workshops:

In the first phase, the teacher sets out some exercises to be solved by the students in due time and form. These exercises are available during the explanation of the subject so that they can practice and resolve any doubts that may arise before the delivery on the VW. Students can upload solutions to the Virtual Classroom in different formats, including podcasts or videos. Once the deadline has passed, the teacher provides the solutions to the exercises, thus allowing the student to carry out a first process of self-reflection on the learning achieved. This means a self-assessment through personal reflection (identifying what has or has not been achieved in order to work on them).

Once the submissions have been received from the participants, the second phase of peer review with feedback begins. In this case, the assignment is done randomly, and each student is assigned two tasks to detect possible deviations both in the assessments made and, in the marks, awarded. The VW is set up with blind peer assessment, i.e., participants are unaware of who is assessing them and who they are assessing. In addition, a restriction is included in the assessment only if the workshop task has been handed in beforehand, i.e., you can only participate if you have already done the task. However, any student will have access to the material whether he/she participates in the assessment. In this way, students will be able to consult, as part of the course material, the proposed exercises, and their solutions.

Once the student accesses the assessment, a teacher-designed rubric is made available. This is intended to achieve an objective assessment by eliminating affective/emotional components. The assessing students are given a space in which they can give feedback (descriptive assessing) to the assessed peer. The deadline for correction is set at a maximum of 48 hours, so that there is not too much time difference between carrying out the activity and receiving the feedback.

Finally, with the closing of the workshop, the process ends. At this point the third stage begins where the student can see the average mark awarded by their two assessors, as well as read the comments received as feedback. Fundamentally, they should attend to those aspects that their assessors have identified as non-achievement, and which will most likely coincide with their initial self-assessment when comparing their solution with the one posted by the teacher.

4. Results

To find out the students' opinion, a questionnaire was designed specifically using the Forms tool of the

Office 365 package. Questions of different types are included, with a predominance of five-point Likert scale questions, with 1 being the worst value corresponding to "strongly disagree" and 5 being the best value corresponding to "strongly agree". It is divided into three blocks with the aim of finding out whether they consider themselves to be prepared to carry out the VW with the prior training available to them, how they rate the fact of participating, and how they rate the peer assessment procedure in which they participate.

Since the capacity for autonomous learning, adaptability and learning to learn (personal and academic maturity) are important for assessing the development of formative assessment, we started by asking them whether they consider themselves to be responsible and hard-working people. Observing the mean score of 3.51 out of 5 together with the Mo=5 and the standard deviation, SD=1.39, it leads us to believe that the profile of the participant is academically mature. However, looking in detail at the percentages of responses, it stands out that 40% of students disagree with the fact that they consider themselves to be a responsible person in their studies. This can have a clear reflection on how they cope with learning autonomously, the ability to adapt academically, or the competence in learning to learn. Confirmation of this problem is found when analyzing the answers to the question about whether they organize themselves to work consistently on their studies. Almost 60% disagree with the fact of doing it correctly.

On the other hand, prior to their participation in the workshops, we wanted to assess the way in which students approach learning quantitative subjects. Specifically, the question arises as to whether, to solve the exercises, they learn only the mechanics of solving them. Thus, the mean score is 2.65 (Mo=2, SD= 1.03), i.e. they do not agree with this statement. Specifically, 57.81% disagreed or completely disagreed, so it seems that they do try to understand the concepts. Moreover, 62.50% agree that they understand the problems they are being asked, although at the end, 60.96% say that they did not understand the reason for performing certain calculations in the exercises.

The above highlights confirm that a high percentage learn the algorithms and develop them without having understood in many cases neither what the problem is nor the reasons why it is developed in this way. Teachers are aware of this situation in which the intended learning is clearly not taking place. To highlight this issue even more because of its relevance, it is observed, thanks to the questionnaire, that 60.94% of the students never ask questions when they do not understand a step in the mechanics of the problem. In addition to this percentage, another 26.56% hardly ever do so, which together leads to 87% being left in doubt in many cases. In other words, without these questions, the teacher usually has no feedback on the development of learning. Thus, the final assessment (grading) often does not reflect real learning but only a short-term reminder of certain steps to be taken.

Now, it is necessary to study the consequences for students of this approach to learning quantitative subjects. According to the data collected, 57.81% of them indicate that their previous mathematical training does not allow them to cope with the university syllabus. As in previous cases, we must add 26% who are not clear about this either, adding up to 80% of students who, after many years of studying mathematics, have doubts about their own education. This again has a clear reflection on autonomy, the ability to learn (autonomous learning) and of course on the application of formative assessment.

Parallel to the virtual workshops, the course continues to be taught with its explanations and use of materials. Therefore, it is also considered appropriate to know their opinion on the clarity of the presentations, the difficulty of the exercises, the quality of the material provided, and the time devoted to each topic, as all of this will be part of their learning for a good self-assessment, peer assessment and feedback.

Thus, they were asked about aspects such as: the clarity of the contents taught, the difficulty of the exercises, and the time taken to explain them. Among the responses analyzed, 40% confirmed that they agreed or strongly agreed that the content presented had been clearly explained. This aspect is rated with an average score of 3.12 out of 5 points (Mo= 4, SD=1.01). Slightly more than 30% neither agree nor disagree with this statement, which can be interpreted as not perceiving the training received in a negative way. Another item is

the rating given to the number of exercises proposed and their difficulty. The response on quantity was rated 3.4 out of 5 (Mo=4, SD=0.9), while difficulty was rated with an average score of 2.44 out of 5 (Mo=2, SD=0.95), i.e. almost 60% considered the difficulty to be important. Finally, to conclude this section, 60% of respondents felt that the material provided did not allow them to prepare the subject without difficulty, in line with the answers to the question on the difficulty of the exercises. Specifically, the average rating was 2.49 out of 5 (Mo=2, SD=1).

After describing both their academic maturity and the development of the subject, we move on to assess the experience of implementing formative assessment using virtual workshops, both for the delivery of the proposed tasks and for peer assessment with feedback. This description includes participation in the workshops, i.e. the follow-up of the continuous assessment, as well as the use of the VW as an assessment tool. Specifically, 62% have voluntarily participated in this experience and among them, 86% have participated and completed the workshops, which is considered positive feedback. Even so, once the workshops are over, it is possible to identify certain problems and difficulties that need to be improved. From the perspective of the satisfaction of the participating students, 69% do not like carrying out exercises in workshop format, rating this aspect with an average score of 2.1 out of 5 (Mo=2, SD=1.39). They have also been asked to assess the fact that their participation is not considered in the final mark. In this sense, despite the fact that almost all the participants do not consider it a waste of time, more than half of them consider that it should receive a grade, i.e. they understand that it is an effort for which they should be compensated.

Regarding the use of the workshop for peer assessment, 75.5% of the students recognize that they do not like to correct their classmates' exercises, and 69% consider that doing so does not allow them to learn from their mistakes. 24.5% of them do not mind because they believe, for the most part, that they learn from mistakes. 10% believe that this form of assessment helps them to learn, thanks to the comparison between their work and that of the other participants.

In the same line as the previous assessments, they consider it positive that the teacher provides them with a rubric for marking the peer assessment work. However, due to the importance of the work to be done, they think that this is not enough. Specifically, 56% of the students think so, which is why it will be necessary to develop them further. Regarding the time taken to carry out both peer assessments and feedback, it is worth noting that almost half of them agree with the deadlines set by the teacher for handing in the assignments. It is therefore another area for improvement, although it is not advisable to allow too much time to elapse between performing the exercise and its correction.

5. Conclusions

The first part of this article deals with one of the initial problems encountered by university teachers. Too often, the student is only concerned with passing the subject and teachers are only concerned with grading it, without even considering whether or not real learning is taking place. All of this may be a consequence of the teacher having absolute hierarchical power in the assessment process, especially in purely summative assessment, which only summaries information in numerical form and makes value judgements involving numbers and data rather than words (Brown, 2015).

The need for lifelong learning means that people must in turn adapt to changing environments, developing a capacity for self-learning and lifelong learning. Change must be accompanied by transformations in the assessment process. Many teachers continue to separate those innovations aimed at the teaching-learning process from those aimed at assessment, which are even relegated to the end.

All of this ignores the fact that the importance of our work lies not only in knowing what content we are trying to teach, but also in how to convey it, in being aware of the difficulties students may have, in understanding the origin of certain problems that may arise in understanding the content, and in knowing how to remedy them in time.

When feedback is given in the form of a numerical mark (grade), without the learner knowing whether it is an arbitrary result or under what criteria it has been determined, there is a risk of creating demotivation, which is not conducive to sustained and lasting learning. For it to be useful and for the student to learn with it, it cannot be disconnected from the rest of the process, especially when technology can help in this task. As can be seen in the work of various authors (Anijovich, 2017; Anijovich & González, 2011; Cañada, 2019; del Mar Sánchez-Vera & Prendes-Espinosa, 2015; Fraile et al., 2018; García et al., 2020; Hortigüela et al., 2019; Ibarra-Sáiz et al., 2012; Kambourova et al., 2021; Rico-Reintsch, 2021; Rodríguez-Esteban et al., 2018; Sadler, 2010) and more specifically in the conclusions of Romero-Martín et al. (2015) "involving students in the assessment process helps to improve their willingness to assess, as it enhances their self-regulation for assessment and learning" (p. 12).

During the training period, self-assessment and peer assessment should gain prominence, especially in the university environment, as there are also digital media available that offer tools designed for this purpose, allowing for relevant information on what the student knows, or what he/she does not yet know in the necessary depth. You just have to know how to use them and get the most out of them.

For this, it is also necessary that the teacher changes his or her role and takes on a purely guiding role, allowing the learner to be involved in the process, with his or her share of responsibility. In the short term, implementation may be difficult, as some university teachers lack the necessary didactic training. Their models or references are often exclusively what they experienced as students and, in turn, reproduce. However, many people are also aware that the constant search for improvement in the learning process also implies the search for a more effective way of assessing. If this leads to an improvement in student learning, this can be considered a major achievement. Not in vain Alzaid (2017) states that peer assessment makes students more responsible for their own learning, while helping to achieve better personal and professional development. In addition, together with self-assessment, they will be able to know how they are progressing in a subject, and it forces the learner to follow up continuously, not leaving everything to the end. It is therefore not a waste of time, but an investment in order to succeed in the course.

Formative assessment, as indicated by Hortigüela et al. (2019), allows us to be more aware of what we are learning, given that there can be no learning if there is no prior awareness of what we are working on. For this reason, the assessment criteria should be defined in advance, and the learner should even be allowed to participate in their development. Therefore, assessment should be seen from a completely open and transversal point of view, leaving students to decide their degree of involvement in the tasks they are required to perform, and allowing them to realize their limitations as well as their potential (Joughin et al., 2017).

From the student's point of view, formative assessment forces them to constantly monitor the subject, taking responsibility for their own learning and that of their peers. Undoubtedly, this process requires a different way of teaching and learning, but, as the results show, it has a positive impact on performance, leading to more meaningful learning. This corroborates the findings of other authors (Alzaid, 2017; Casal & García, 2019; Rodríguez-Esteban et al., 2018), who stress its importance in achieving the expected learning outcomes and, therefore, greater personal and professional development in the future.

Of course, this study has limitations and improvements. It would be desirable not only to increase the number of students in the sample, but also to involve more teachers, especially those with profiles not used to this type of assessment. It would also be desirable to be able to investigate the results, through the students themselves, by comparing those subjects that follow a type of formative assessment with those that only use summative assessment. And, finally, to see whether the demands of the new curricula, with some subjects restricted by teaching guides that do not allow modifications unless they appear in the degree reports, are causing fewer university teachers to consider perfecting their assessment systems.

To conclude, if we want students to improve their competences in the subject, the assessment process must be improved. If we also manage to involve them in this task, as it is a task shared by all, which also integrates

reflection and responsibility in the process, we can ensure that the assessment is not just an end to give them a final mark, but that it forms part of their own learning process. A more complete, open, participatory, and democratic assessment process that engages the student, who is the real protagonist.

Acknowledgements

Funding

References

Alonso, M.; Gil, D.; Martínez, J. (1996). Evaluar no es calificar. La evaluación y la calificación en una enseñanza constructiva de las ciencias. Revista Investigación en la Escuela, 30, 15-26. https://doi.org/10.12795/IE.1996.i30.02.

Álvarez, J. M. (2011). Evaluar para conocer, examinar para excluir. Madrid: Ediciones Morata, SL.

Alzaid, J. M. (2017). The Effect of Peer Assessment on the Evaluation Process of Students. International Education Studies, 10(6), 159-173. http://dx.doi.org/10.5539/ies.v10n6p159.

Anderson, L. W.; Krathwohl, D. R. (2001). A taxonomy for learning, teaching, and assessing: A revision of Bloom's taxonomy of educational objectives. New York: Longman.

Andrade, H.; Brookhart, S. (2016). The role of classroom assessment in supporting self-regulated learning. Paper presented at the Assessment for Learning: Meeting the Challenge of Implementation, 293-309. https://doi.org/10.1007/978-3-319-39211-0_17.

Anijovich, R. (2017). La evaluación formativa en la enseñanza superior. Voces de la Educación, 2(3), 31-36.

Anijovich, R.; González, C. (2011). Evaluar para aprender. Conceptos e instrumentos. Buenos Aires, Argentina: Aique Grupo Editor.

Aranda, A. F.; Pastor, V. M. L.; Oliva, F. J. C.; Romero, R. (2013). La evaluación formativa en docencia universitaria y el rendimiento académico del alumnado. Aula Abierta, 41(2), 23-34.

Brown, S. (2015a). La evaluación auténtica: el uso de la evaluación para ayudar a los estudiantes a aprender. Revista Electrónica de Investigación y Evaluación Educativa, 21(2). http://dx.doi.org/10.7203/relieve.21.2.7674.

Brown, S. (2015b). Perspectivas internacionales sobre la práctica de la evaluación en Educación Superior. Revista Electrónica de Investigación y Evaluación Educativa, 21(2). http://dx.doi.org/10.7203/relieve.21.1.6403.

Calkins, A.; Conley, D.; Heritage, M.; Merino, N.; Pecheone, R.; Pittenger, L.; Udall, D.; Wells, J. (2018). Five Elements for Assessment Design and Use to Support Student Autonomy. Students at the Center: Deeper Learning Research Series. Jobs for the Future.

Cañada, M. D. (2019). Evalúo, luego... ¿aprendo? La evaluación entre iguales como instrumento para mejorar la competencia oral en FLE. Çédille Revista de Estudios Franceses, (15), 109-137.

Casal, L.; García, B. (2019). Una experiencia de formación del profesorado para implementar la evaluación entre pares en el campus virtual de la Universidad de Santiago de Compostela. Pixel-Bit, Revista de Medios y Educacion, (54). https://doi.org/10.12795/pixelbit.2019.i54.07.

Coertjens, L.; Brahm, T.; Trautwein, C.; Lindblom-Ylänne, S. (2017). Students' transition into higher education from an international perspective. Higher Education, 73(3), 357-369. https://doi.org/10.1007/s10734-016-0092-y.

Cruzado Saldaña, J. J. (2022). La evaluación formativa en la educación. Revista Comuni@cción, 13(2), 149-160. https://doi.org/10.33595/2226-1478.13.2.672.

Delgado, J. R.; Medina, N.; Delgado Fernández, J. R. (2019). La evaluación por pares. Una alternativa de evaluación entre estudiantes universitarios. ReHuSo, Revista de Ciencias Humanísticas y Sociales, 5(2), 14-26. https://doi.org/10.33936/rehuso.v5i2.2393.

del Mar Sánchez-Vera, M.; Prendes-Espinosa, M. P. (2015). Más allá de las pruebas objetivas y la evaluación por pares: alternativas de evaluación en los MOOC. RUSC. Universities and Knowledge Society Journal, 12(1), 119-130. http://dx.doi.org/10.7238/rusc.v12i1.2262.

Hattie, J.; Timperley, H. (2007). The power of feedback. Review of Educational Research, 77(1), 81-112. https://doi.org/10.3102/003465430298487.

Hevia Artime, I.; Fueyo Gutiérrez, A. (2018). Aprendizaje situado en el diseño de entornos virtuales de aprendizaje: una experiencia de aprendizaje entre pares en una comunidad de práctica. Aula Abierta, 47(3), 347-354. http://dx.doi.org/10.17811/rifie.47.3.2018.347-354.

Fraile, J.; Gil-Izquierdo, M.; Zamorano-Sande, D.; Sánchez-Iglesias, I. (2020). Autorregulación del aprendizaje y procesos de evaluación formativa en los trabajos en grupo. RELIEVE. Revista Electrónica de Investigación y Evaluación Educativa, 26(1). https://doi.org/10.7203/relieve.26.1.17402.

Fraile, J.; Pardo, R.; Panadero, E. (2018). Autoevaluación y autocalificación en el Grado en Ciencias de la Actividad Física y del Deporte: Estudio censal de las guías docentes. Profesorado, Revista de Currículum y Formación del Profesorado, 22(3), 163-182. https://doi.org/10.30827/profesorado.v22i3.7997.

García, A. C.; Gil-Mediavilla, M.; Álvarez, I.; Casares, M. A. (2020). Evaluación entre iguales en entornos de educación superior online mediante el taller de Moodle. Estudio de caso. Formación Universitaria, 13(2), 119-126. http://dx.doi.org/10.4067/S0718-50062020000200119.

Hamodi, C.; López, V. M.; López, A. T. (2015). Medios, técnicas e instrumentos de evaluación formativa y compartida del aprendizaje en educación superior. Perfiles Educativos, 37(147), 146-161. https://doi.org/10.1016/j.pe.2015.10.004.

Hattie, J. (2008). Visible learning: A synthesis of over 800 meta-analyses relating to achievement. Londres: Routledge.

Hortigüela, D.; Pérez-Pueyo, Á.; Abella, V. (2015). Perspectiva del alumnado sobre la evaluación tradicional y la evaluación formativa: contraste de grupos en las mismas asignaturas. REICE: Revista Iberoamericana sobre Calidad, Eficacia y Cambio en Educación, 13(1), 35-48.

Hortigüela, D.; Pérez-Pueyo, Á.; González-Calvo, G. (2019). Pero… ¿A qué nos referimos realmente con la Evaluación Formativa y Compartida?: Confusiones Habituales y Reflexiones Prácticas. Revista Iberoamericana De Evaluación Educativa, 12(1), 13-27. https://doi.org/10.15366/riee2019.12.1.001.

Ibarra-Saiz, M. S.; Rodríguez-Gómez, G. (2020). Aprendiendo a evaluar para aprender en la Educación Superior. Revista Iberoamericana de Evaluación Educativa, 13(1), 5-8. https://doi.org/10.15366/riee2020.13.1.

Ibarra-Sáiz, M. S.; Rodríguez-Gómez, G.; Gómez-Ruiz, M. A. (2012). La evaluación entre iguales: beneficios y estrategias para su práctica en la universidad. Revista de Educación. https://doi.org/10-4438/1988-592X-RE-2010-359-092.

Joughin, G.; Dawson, P.; Boud, D. (2017). Improving assessment tasks through addressing our unconscious limits to change. Assessment & Evaluation in Higher Education, 42(8), 1221-1232. https://doi.org/10.1080/02602938.2016.1257689.

Kambourova, M.; González-Agudelo, E. M.; Grisales-Franco, L. M. (2021). La autoevaluación del estudiante universitario: revisión de la literatura. Revista Interuniversitaria, 33(2), 217-264. https://doi.org/10.14201/teri.23672.

Panadero, E.; Broadbent, J. (2018). Developing evaluative judgement: A self-regulated learning perspective. Abingdon: Routledge.

Rodríguez-Esteban, M. A.; Frechilla-Alonso, M. A.; Sáez-Pérez, M. P. (2018). Implementación de la evaluación por pares como herramienta de aprendizaje en grupos numerosos. Experiencia docente entre universidades. Advances in Building Education, 2(1), 66-82. https://doi.org/10.20868/abe.2018.1.3694.

Romero-Martín, R.; Castejón-Oliva, F. J.; López-Pastor, V. (2015). Divergencias del alumnado y del profesorado universitario sobre las dificultades para aplicar la evaluación formativa. Revista Electrónica de Investigación y Evaluación Educativa, 21(1). http://dx.doi.org/10.7203/relieve.21.1.5169.

Sadler, D. R. (2010). Beyond feedback: Developing student capability in complex appraisal. Assessment & Evaluation in Higher Education, 35(5), 535-550. https://doi.org/10.1080/02602930903541015.

Sanmartí, N. (2007). 10 ideas clave. Evaluar para aprender. Barcelona: Graó.

Tavakol, M.; Dennick, R. (2011). Making sense of Cronbach's alpha. International Journal of Medical Education, 2, 53-55.

Wiliam, D. (2011). Embedded formative assessment. Bloomington, Indiana: Solution Tree Press.