

Kahoot! Plickers and Socrative: ICT resources to assess musical content in Primary Education

Kahoot!, Plickers y Socrative: recursos TIC para evaluar contenidos educativo-musicales en educación primaria

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ABSTRACT

Keywords

Evaluation;
music education;
ICT; primary
education;
digital platforms

Assessing musical competencies is a complicated process. However, the implementation of ICT in the classroom has facilitated this task, helping the Music education teacher to collect data in real time to describe the level of musical content of the students and information to fill in the required official documents. In this study, different evaluation strategies in music education are analyzed, as well as the main characteristics of three digital platforms, Kahoot!, Plickers and Socrative, whose main potential lies in the generation of gamified evaluation tests and evaluation and qualification reports of the students required by the educational administrations. The work method has been the analysis of information, which has served to make an exhaustive description of these platforms with the aim of providing the teachers information and tools that enable them to use and implement ICT in the evaluation of musical content of the Primary Education curriculum. Finally, the conclusions related to the benefits and limitations of these digital tools when applied in the Music classroom are presented.

RESUMEN

Palabras clave

Evaluación;
educación musical;
TIC; educación
primaria;
plataformas
digitales

La implementación de las TIC en el aula ha facilitado la evaluación de competencias musicales, aunque se trate de un proceso complicado, pues ayuda al maestro de Música a recopilar datos en tiempo real que describen el nivel de adquisición de contenidos musicales del alumnado e información para cumplimentar los documentos oficiales requeridos. En este estudio se analizaron diferentes estrategias de evaluación en educación musical, así como las características principales de tres plataformas digitales: Kahoot!, Plickers y Socrative, cuyo principal potencial estriba en la generación de pruebas de evaluación gamificadas, además de informes de valoración y calificación del alumnado requeridos por las administraciones educativas. El método de trabajo fue el análisis de información, que ha servido para realizar una descripción exhaustiva de estas plataformas, con el objetivo de proporcionar al profesorado información y herramientas que lo capaciten para implementar las TIC en la evaluación de contenidos musicales propios del currículo de educación primaria. Finalmente, se presentan las conclusiones relacionadas con las bondades y limitaciones de estas herramientas digitales al aplicarlas en el aula.

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INTRODUCTION

Assessment of competencies and capabilities of students is one of the central aspects of any educational process since, although it can be a complicated and extensive procedure, the effectiveness of this guarantees the student's academic progress (Puche, 2018). This makes it a mandatory and essential operation, as defined in the educational standards in force in Spain.

In this sense, both the LOMCE (Organic Law 8/2013 for the improvement of educational quality, of December 9, published on December 10, 2013) and the recently approved LOMLOE (Organic Law 3/2020, amending Organic Law 2/2006 on Education, of May 3, published on December 30, 2020) provide that the evaluation criteria that indicate the achievement of objectives and the degree of acquisition of competencies associated with the areas of knowledge that make up the compulsory teachings of our educational system, are an essential factor integrated into the curriculum. Thus, the evaluation in primary education, the stage on which the study is focused, will be continuous and global; in addition, it will take the progression of the student in the set of disciplines that make it up into account.

Conversely, Royal Decree 126/2014 of February 28, which establishes the basic curriculum for primary education (published on March 1, 2014), states the convenience of implementing new assessment strategies to make significant changes in the exercises that students will solve, as well as innovative methodological designs. In the same way, it defines the evaluation criteria of each of the curricular areas, as specific references to calculate the student's learning in terms of achievements and acquisition of competencies, and states that the necessary educational reinforcement measures must be taken whenever difficulties are detected in the student's learning process. Finally, it states the student's right to an evaluation in which objectivity prevails, in which his/her effort, dedication and performance will be recognized and valued, in accordance with the evaluation criteria and the evaluable learning standards defined in Annexes I and II of the Royal Decree.

In accordance with the above, Vernia *et al.* (2017) define assessment as a sum of experiences and experiences of teachers and students who try to evidence or verify specific learning of the student with the ultimate goal of assessing and improving all educational areas, whose functionality is conditioned by effective communication between the evaluator and the evaluated. Along the same lines, Parcerisa (2008) states that an assessment should not only be used to pass a level, but should also be a support in the teaching-learning process that will directly affect the curriculum, the teacher, the tools, strategies and materials used in the process.

With regards the evaluation of the teaching-learning processes of music, the nature of the discipline makes its development very difficult, considering that it is an ephemeral art. Taking into account this premise, evaluation in the area of music should lead to the improvement of the students' knowledge (musical knowledge), skills (musical skills) and feelings (feelings, emotions and perceptions). Only in this way will evaluation fulfill its three basic pillars: rich and positive feedback, reflection and action (Chacón, 2012). On the other hand, Magnitzky and Sepúlveda (2017) point out that evaluation for this discipline will make sense as long as it is a constant process over time, with formative evaluation being the fundamental support in the teaching-learning processes.

Musical skills tests, accepted and used in the field of music psychology, have been responsible for assessing the competencies of students and measuring their talents with the intention of knowing their abilities to appreciate and analyze the musical fact and, subsequently, to access musical creation (Quintana *et al.*, 2011). This led to the tests being associated with different educational-musical methodologies¹ and transferred to school environments. However, these tests are configured to reveal the musical profiles of students rather than to achieve educational objectives (Galera, 2014), focusing on providing quantitative data, focused on providing scores that have nothing to do with the students' skills in relation to what they know, feel and are able to do (Duke, 2010).

With respect to this search for data that provide a translation into numerical grades, it is essential to bear in mind that the assessment of musical learning at the primary education stage may be insufficient if the mastery of basic musical skills (musical perception and expression) loses specific weight in favor of these grades. On this, Chrystosomou (2015) states that for the evaluation of artistic learning to be balanced, it is necessary to consider both the interest of the students and the measurable results, so it will be necessary to program qualitative and quantitative techniques with which to collect their progress.

To this end, as Prieto (2001) states, it is necessary to decide on an evaluation model that is as adapted as possible to our needs based on the following aspects:

- The type of students with whom we will be teaching
- The time we will dedicate to the evaluation.

¹ The tests were associated with the Kodály, Orff, Dalcroze and Willems methodologies, mainly trying to achieve quantitative results related to musical expression (vocal, instrumental and corporal) and auditory education.

- The means we have to implement the evaluation process.
- The contents we want to evaluate.
- The tools we will need to evaluate the results obtained.
- The evaluation of the process itself, which will help us to know the effectiveness of the method used.

Navarro (2013) states that the evaluation of musical content is surrounded by a high level of implicit subjectivity, which greatly complicates the systematization and objective assessment of aesthetic concepts. For his part, Prieto (2001) reminds us that, due to this degree of subjectivity, the above aspects will make sense as long as we start from the idea that an evaluation aimed at seeking and detecting error will be less perfect than one that seeks and detects learning.

IMPLEMENTATION AND USE OF DIGITAL TOOLS IN THE EVALUATION PROCESS

The introduction of information and communication technologies (ICT) in teaching has opened a new perspective in the evaluation process. Thus, digital tools such as Kahoot!, Socrative, EDPuzzle, Plickers or Google Forms, among others, have become a real revolution by evaluating students in a different, simple, convenient and fast way, not so much by introducing conceptual changes in these processes, but by enabling a more efficient use of time and materials (Rodríguez, 2005).

Implementing ICT does not mean that assessment no longer needs meticulous and coherent planning with the contents worked on. On this, Tompkins *et al.* (2018) state that if technology is used efficiently it can facilitate the teacher's work by engaging students in critical thinking, in addition to quickly verifying understanding and data collection as students make progress in the acquisition of content.

Focusing attention on the advantages that assessment processes mediated by digital tools can offer, there are a number of studies (Fernández and Cebreiro, 2003; Gómez *et al.*, 2013; Lipsman, 2016; Espigares and Bautista, 2018; Hernández *et al.*, 2019; Ferreiro and Fernández, 2020; Hernández, 2020) who concur in highlighting the benefits for both teachers and students:

- Increased frequency of evaluation
- Immediate correction and delivery of results
- Reliable process

- Reduced bureaucratic burden
- Ability to save and print reports in a variety of formats
- Easy sharing of results with other colleagues
- Test design based on our programming and student characteristics
- Combination of different materials and tools when designing questions (images, graphics, sounds, videos, etc.)
- Greater access flexibility
- Active student involvement
- Increased intrinsic and extrinsic motivation
- Immediate feedback
- Reduced anxiety and stress caused by traditional tests.

One of the most relevant strengths provided by the implementation of ICT in assessment is associated with the integration of gamification, which Area and González (2015) define as the use of strategies and elements related to the design of games in educational environments.

In this sense, Pintor (2017) specifies that gamification is an excellent tool to motivate, build loyalty and encourage collaborative work of our students, by making the evaluation process more attractive; in addition, he points out that the linking of gamification with evaluation should occur without losing its essence and always ensuring that it contributes to its educational value.

In the case of music education, evaluating with ICT facilitates a high level of control of the teaching-learning processes of music, as well as a more efficient management of educational processes (Espigares and García, 2010). In this sense, digital tools allow the implementation of evaluation activities from quantitative and qualitative paradigms. Web applications such as Incredibox, Music Maker Jam (also available for mobile devices), Tonematrix or Chrome Music Lab, and specific applications for smartphones and tablets such as Loopify, Toc and Roll, Remixlive, Groove Pad or Note Beat, are excellent tools to create, experiment and innovate with music, while allowing us to collect useful information to assess the musical abilities of our students through gamified environments. Similarly, applications such as Maestro del ritmo, Ear Training, Music Notes Tutorial, Note Teacher Free, Rhythm Party, Rhythm Tap, Leer Notas Musicales, among others, give the possibility to evaluate musical skills related to reading and placing notes on the staff, rhythmic and melodic education, auditory discrimination, elements of musical language, and even music theory and history.

The use and implementation of ICT in the primary music classroom requires in-depth knowledge of the applications to be used, the possibilities and technological skills of the students, the equipment of the classrooms themselves, the center's Wi-Fi network and the age of the students with whom the evaluation process is to be carried out with technological tools (López-García, 2016). In addition, it will be essential to include the use of these applications and the digital artifacts that will be needed in programming. Using technology just for the sake of using it is a mistake that must be corrected through scrupulous, structured and justified planning as a fundamental principle of the evaluation action in which, as Odegaard (2008) warns, the correct organization and sequencing of standards and criteria will have to be added for the evaluation process to be successful.

In accordance with the above, Puche (2018) points out that, although international works and experiences indicate that ICT and multimedia resources have become innovative, effective and fun tools in the development and evaluation of content, the use of more technology without previous organizational criteria is no guarantee of better academic results (see Figure 1).

This study presents three digital platforms (Kahoot!, Plickers and Socrative) which, although they are not specific tools for developing musical skills like those mentioned above, allow us to generate evaluation tests in a simple way with which to collect quantitative data related to both practical and theoretical musical content, adapting easily to the music education curricula in force for the primary education stage.

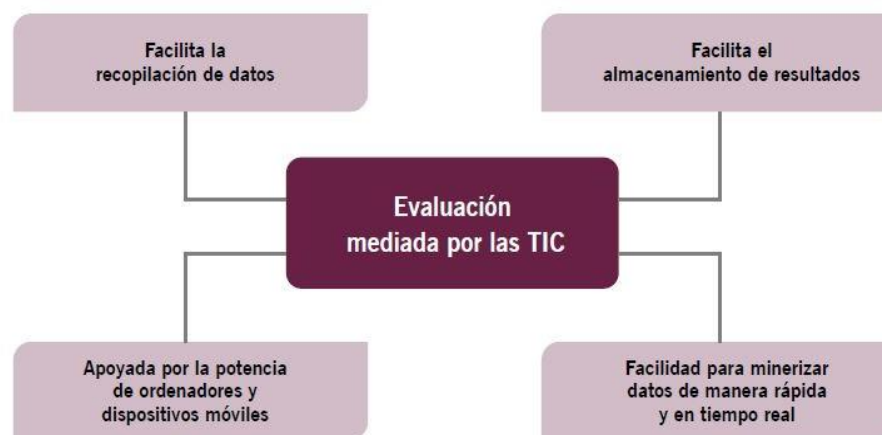


Figure 1. Implicit factors in the development of evaluation processes mediated by ICT.

METHOD

According to Pérez and Jódar (2019), this study was based on the detailed analysis of the possibilities offered by the Kahoot!, Plickers and Socrative platforms as facilitators of musical content evaluation processes in the primary education stage. This analysis focused on the codification of the observable properties of these platforms that make it possible to generate activities that can be used in an evaluative test; likewise, the descriptive research sought to discover the basic components of these tools through a process that has sought, at all times, the rigor of measurement (López-Noguero, 2002). It is, therefore, a non-experimental study where the description of these three platforms was configured as its main axis.

This was made possible by taking as a model the classification made by Hernández (2020), which allows the potential of the platforms to be categorized according to the following variables:

- Basic features
 - Assignment of points
 - Time control
 - Need for teacher/classroom screen and some other device
 - Connection requirements
 - Maximum number of players
 - Types of questions
 - Background music
 - Feedback
 - Add-ons
 - Possibility to generate paper tests
 - Generation of results
- Gamification level
- Level of digital skills required
- Evaluative capacity

With respect to the level of gamification and the evaluative capacity of these platforms, the criteria of Hernández (2020, p. 109) related to the levels of gamification, the definition and scope, the evaluation and the series of examples he proposes have been taken into account. In turn, to estimate the level of teaching digital competence required, the Survey on Digital Competence of Teachers (European Commission), a self-assessment tool based on the European Framework of Digital Competence for Educators, has been used, where six levels of ability are established and measured based on six blocks of interest. In the case at

hand, we took as a reference block or area 2. Digital Resources, as well as block or area 4. Evaluation.²

According to Sádaba (2016), the applied analysis and its subsequent categorization have allowed us to understand and describe the configuration possibilities of these three platforms to design activities for the evaluation of musical contents in the primary education stage.

Once these variables were determined and contextualized, a testing process of the selected platforms was carried out to verify that the parameters they offer fit the evaluative needs of musical contents. Then, different activities related to musical perception were configured from the content blocks established by the Spanish curriculum of music education in primary school, and were implemented in the 4th, 5th and 6th grades of two public schools in the city of Albacete, with a satisfactory results regarding the use of these platforms as evaluation tools and facilitators of the data collection and evaluation processes for the specialist teachers of the discipline of music in both schools.

IMPLEMENTING KAHOOT!, PLICKERS AND SOCRATIVE IN THE EVALUATION OF MUSICAL CONTENT IN ELEMENTARY SCHOOL

The aforementioned educational-musical applications, both the specific ones for mobile devices and the web tools, provide us with data on an individualized basis in the sense that it is necessary to track student by student and device by device (computer, smartphone, tablet, among others). This can complicate and lengthen the evaluation processes of the musical content acquired by students, in addition to the risk of losing important information.

In this sense, Kahoot!, Plickers and Socrative are an excellent example of alternative and innovative assessment strategies with which both individual and group data can be collected in real time, en bloc and without loss of relevant information. Moreover, as Calvillo and Pérez (2018) point out, they encourage student participation in their own assessment process from a playful perspective and provide teachers with tools to carry out these assessment tests, while serving to collect information on the student's prior knowledge, by using them as a training tool, even to review, reinforce, strengthen and expand fundamental aspects related to the contents being worked on in class. Similarly, they are able to combine the acquisition of curricular content with the

² The self-assessment survey can be accessed through this link:
<https://ec.europa.eu/eusurvey/runner/DigCompEdu-H-ES?startQuiz=true&surveylanguage=EN#page0>

development of digital competence through technologies used daily by students (Marín *et al.*, 2018).

It is relevant to mention that the three tools are based on immediate response systems (IRS), understood as devices with which the student can provide an instant controlled response to the questions formulated by the teacher (López-Quintero *et al.*, 2016). These CRSs, as pointed out by Vergara *et al.* (2020), have been very well received in educational environments, since they are easy to implement, encourage and favor the integration and participation of students, increase motivation and help to value ICTs from a perspective clearly related to teaching-learning processes.

Faced with the question of why these three platforms have been selected, although the specialized literature on the evaluation of musical content using ICT is scarce, studies such as those by Espigares *et al.* (2017) and Masdeu (2018) have provided a series of factors to take into account when selecting the appropriate digital tools to carry out digitized evaluation processes:

- Immediate correction
- Work individualization
- Motivate and maintain interest
- Have the ability to manage recorded data
- Enable student profiles to be established
- They offer automatic evaluation
- They have an important level of gamification
- Fairly complete free access

Conversely, one of the most relevant features of these platforms is that they allow the development of statistical models and save the results for later analysis (Espigares and Bautista, 2018), which facilitates quantitative evaluation processes. In this regard, Hernández (2020) states that evaluating, especially in music education, should not consist solely of grading, although the teaching staff is required to put numerical grades in the official academic records, since these do not admit personalized scores, badges, awards, or recognitions, common strategies in this type of gamified digital tools.

When delving into the link between these platforms and the concept of *gamification*, Vergara *et al.* (2020) state that all three are considered game-based student response systems (GSRS) that combine SRIs and that, in recent years, have become the most relevant platforms with the greatest impact in the educational world. In this same sense, Vick (2019) and Wang

and Tahir (2020) point out that Kahoot! is considered one of the most popular tools within game-supported learning. Likewise, both studies offer a series of data that support their choice:

- Kahoot! exceeds 70 million monthly users, and more than 2.5 billion total people, from over 200 countries, have played as of 2019.
- Plickers exceeds 340 million student responses, has more than 20 million questions asked, and more than one million registered teachers from nearly 200 different countries.
- Socrative is used by several million students and teachers around the world.

In turn, the contents and assessable learning standards for music education developed in Royal Decree 126/2014, of February 28, establishing the basic curriculum for primary education have been taken into account, as well as their adaptation to evaluation processes through ICT, based on the tools provided by these three platforms (see Table 1).

Table 1. Basic characteristics and possibilities offered by the free versions of these platforms in evaluation processes

Characteristics	Kahoot!	Plickers	Socrative
Score assignment	Depends on how fast you respond and whether or not the answer is correct	Depends on whether or not the answer is correct	Depends on whether or not the answer is correct
Time control	Yes, for each question. Can be set between 20 seconds and 4 minutes	No, it depends on the person in charge of carrying out the test who will indicate its end	No, it depends on the person in charge of carrying out the test who will indicate its end

Characteristics	Kahoot!	Plickers	Socrative
Need for teacher/classroom screen and some other device	Yes, the questions appear on the screen and the participants use their mobile devices to answer	Yes, it is needed (the questions appear on the screen), but the participants do not need any device, only the QR code-like marks provided by the platform	No, the questions are displayed on the participant's mobile device. Screen can be used in "space race" mode
Connection needs	Yes (wifi or cable)	Yes (wifi or cable)	Yes (wifi or cable)
Maximum number of players	Up to 50 players when you register as a teacher	Up to 63 players	Up to 50 players (up to 20 in "space race" mode)
Type of questions	Multiple choice and dichotomous (Y/N, T/F)	Multiple choice and dichotomous (Y/N, T/F)	Multiple choice, dichotomous (Y/N, T/F) and short-answer
Background music	Yes, with the possibility of choosing several melodies	No	No
Feedback	No, it can be generated by the teacher once the question has been answered	No, it can be generated by the teacher once the question has been answered	Yes, it is displayed once the question is answered
Complements	Images and videos can be inserted	Images can be inserted	Images can be inserted
Possibility of generating paper tests	Yes, downloading templates from the web	Yes, from the platform	Yes, from the platform
Generation of results	Yes, in Excel and in PDF	Yes, in Excel and in PDF	Yes, in Excel and in PDF

Characteristics	Kahoot!	Plickers	Socrative
Level of gamification	Medium-high	Medium-high	Medium-high
Digital teaching competence required	Medium-high	Medium-high	Medium-high
Evaluative capacity	High	High	High

Source: self-made according to Hernández (2020, p. 112).

In this way, the platforms become, on the one hand, great allies for teachers, who see their efforts reduced when evaluating and, on the other hand, friendly tools for students, who see the evaluation from a different and attractive perspective, helping them to lose their fear of the task of assessing the contents and lowering the anxiety level of some students (Martín, 2019).

One of the most significant features of these platforms is that they allow initiating a process of group reflection that favors the acquired knowledge to be fixed quickly and with greater depth. In this sense, Forés and Ligoiz (2009) remind us that the debate that can (and should) be generated in the resolution of questions has a high impact on learning, since it develops active processes of interaction among participants and their critical and reflective thinking, and therefore promotes meaningful learning experiences (see Figure 2).



Figure 2. Basic methodological strategies in the use and application of digital platforms to evaluate.

The Kahoot! platform as a tool for playing and evaluating musical content

This digital platform allows to reinforce, expand and evaluate concepts using an interface similar to that of a quiz. Although its free version does

not offer the possibility of generating surveys, using puzzle or slide-type formats or launching open questions, it does support the creation of quiz-type games (quiz) that can be projected in class for students to answer through their computers, tablets or cell phones, either individually or in groups (Calvillo and Pérez, 2018).

One of its strengths is found in the option to search and select learning games previously configured by other users of the platform, which can be used directly or modified to adapt them to our needs.

In relation to the technical requirements for its use, Kahoot! does not have to be installed on the participants' device, but it does need an internet connection to access directly from any browser; a free app, available for both Android and iOS, can also be installed to give access to the platform.

When creating a new quiz, all you have to do is add questions and possible answers, mark the valid option or options, the points you assign to each question (from 0 to 2000) and the maximum time to answer (between five seconds and four minutes). In addition, if necessary, text, numbers, formulas, images or videos can be added (Martín-Sánchez, 2019). Once finished, it offers the possibility of naming it, adding a brief description and making it public or private.

To start playing, we must select the Kahoot! we are interested in, check that the game options fit our needs and select between the classic format (individual) or team mode. Then the platform provides a numerical code for players to register in the game and, from there, the questions are launched. At the end of the game, a podium is displayed with the top three finishers and the score obtained by each one.

The basic steps to start working with Kahoot! are as follows:

- Register at: www.kahoot.com
- From this point on, you can search and select content created by other users or create a Kahoot! from scratch to create a quiz, i.e. a question and answer game (the only option available in the free version), click on Quiz and start configuring the question that will be launched to the students, the time limit, the possible answers, mark the correct answer or answers and, if you find it convenient, add an image or video.
- Launch Kahoot! so that participants can enter the numerical code on their devices.
- Students should register by typing their name (a nickname is not recommended), this will facilitate the task of compiling the score report, as well as tracking individual students' development afterwards.

- Once registered, the game will begin. The students will have to select on their device one of the answers to the question posed to them, according to different figures (triangle, rhombus, circle and square) and colors. At this point, both the correctness of the answer and the speed of the answer will be taken into account. The position assigned to each participant will depend on these two factors.
- The group of players will be able to see the number of correct and incorrect answers in general figures, as well as the three people with the highest accumulated score during the whole process.
- Finally, the results will be displayed on the podium and we will be offered the option to save them for consultation at any other time.

Implementation and use of Kahoot! in the classroom can generate inconveniences that will have to be taken into account and that will force us to restructure the activity. On this, Martín-Sánchez (2019) states that one of the possible problems we may face is related to the insufficient number or, even, the non-existence of devices; in this case, he proposes as an exceptional resource to use printable paper templates found on the Internet (this, at first, may contrast with what has been exposed so far), in which students can mark their answers avoiding the exclusion of those who do not have a digital device or have forgotten to bring it.

The fact that the speed of response is an added value (as long as it is answered correctly), may increase the difficulty for those students who have reading problems. To this end, Martín-Sánchez (2019) recommends that the teacher read aloud the questions and answers and mark the times in which the game takes place.

Currently, Kahoot! has become one of the most widely used platforms to carry out different, fun and enjoyable evaluation processes, which help our students to learn, remember and reinforce knowledge, avoiding the moments of tension and anxiety generated by traditional evaluation tests.

Plickers in the Music classroom

Plickers is a digital platform that offers a fairly complete free version to collect data in real time, which we can use in the evaluation process of our students. It provides percentages and weights, the average values, maximum, minimum and standard deviation from the score obtained by the participants (Vargas *et al.*, 2019), thus helping to check their learning level. Although it is a quantitative assessment tool, it uses an unobtrusive interface based on gamification parameters, producing positive feedback capable of avoiding moments of nerves and stress.

With Plickers, various multiple-choice tests can be configured, in survey format, true or false, among others, to which visual support can be added through images that will serve as an aid and complement to answer the

questions posed (Lourido, 2019). All this, as Tompkins *et al.* (2018) point out, with a minimum use of resources such as a computer, a screen on which to project, a projector and a mobile device for the teacher in which, previously, he/she must download and install the corresponding application, available for iOS and Android.

The platform provides markers or cards similar to QR codes, one for each student, which must be printed on paper or cardboard. These cards can be oriented in four different ways (A, B, C or D) that correspond to the four possible answers supported by the application; "depending on the position in which the participant places the card, so will be his or her answer" (Calvillo and Pérez, 2018, p. 18).

Once the correct answer has been selected, the card must be shown to the teacher, who will collect them all simultaneously, as they enter the field of view of the camera of his mobile device, which will scan and record them. In turn, the computer screen will display the marks that have yet to be scanned, while the teacher can visualize on his smartphone or tablet the percentages corresponding to the correct and incorrect answers of the participants, as well as the answers of each of them.

The basic steps to use Plickers in the classroom are as follows:

- 1) Access www.plickers.com and register by creating a user name and password.
- 2) Install the application on your mobile device. When we open it, we will enter the username and password registered when registering on the web.
- 3) Create a class and add the names of the students. Each of them will be assigned a number that we will use when distributing the cards.
- 4) Download and print the bookmarks from the Help-Get Plickers Cards option. Here we can select various sizes of markers and fonts, trying to adapt to the age of our students. Remember that the same cards are valid for different groups and courses, we will only have to create as many classes or groups as necessary.
- 5) Create the questions from Your Library, select the correct answer, insert an image if desired and assign them to the classes or groups they are intended for.
- 6) To start the test, from the teacher's mobile device, enter Now Playing and activate the class with which the activity will be carried out. Although, in principle, it would not be necessary to project the development of the assessment in real time, Lourido (2019) recommends it, as it helps students to be connected to the process at all

times, making it more dynamic and attractive, which, accordingly, generates a high level of motivation

- 7) Finally, once the test is finished, we can access the overall and individual results and percentages and visualize them through different graphs by entering Scorsheet or Reports, with the option to export them to Excel and print individualized reports in PDF format.

Although this platform does not allow adding audio or video files to enrich the questions, there are free and easy-to-use applications to design the sound or audiovisual files needed to evaluate the content and musical abilities of our students (discrimination of sound parameters, melodic and rhythmic exercises, auditory and visual timbre discrimination, among others).

Finally, it is important to remember that this platform allows optimizing the evaluation of student learning in the classroom, while providing immediate feedback that will help measure the level of musical knowledge acquired by students, providing the teacher with valuable information to influence those skills in which they show greater difficulties (see Figure 3).



Figure 3. Advantages offered by Plickers in the student assessment process.

Using Socratic in the assessment of musical knowledge

This platform is probably a platform that offers the most possibilities in its free version in terms of configuration of specific tests to perform assessment processes. In addition, as Narbón and Peiró (2018) point out,

it is a fairly intuitive and graphical tool, which facilitates a quick acclimatization with its working environment.

Archila (2017) states that Socrative teaches students to analyze ideas critically, develop intellectual and thinking skills, while facilitating the understanding of principles and generalizations.

With Socrative we can set up individual or group quizzes with three different answer options: true or false, multiple choice and short answer. One of its great strengths lies in the possibility of configuring anonymous quizzes, ensuring students a participation without fear of selecting wrong answers (Forteza, 2019), as well as an open navigation mode (not guided by the teacher) in which each student sets his or her own pace when answering and chooses the order in which he or she wants to answer each question.

Like Kahoot!, this platform allows us to take advantage of existing quizzes and, in turn, to share with other colleagues the customized tests that we set up, adapted to our needs. Although a previous installation of the tool is not essential to play, there is also the possibility of downloading the application to our mobile device to access the game, both for Android and iOS.

To start using Socrative, follow the steps below:

- Register as a teacher on the home page
- Configure the room you are going to use.
- Select the Tests option and follow the instructions for designing the questionnaire. Here we can choose the different types of questions, even alternate them, add an image and write a brief explanation with which the students will get immediate feedback on each question answered.
- Launch the test. To do this, the different features allowed by the platform (individual or group game, pace set by the teacher or by the participant, etc.) must be configured. From this moment on, the student will have to access the platform from their mobile devices (Student Login-Socrative), without the need to register, and enter the name of the room that we created previously.
- Once the participants are inside the room, they will be able to start the test.

One of the most attractive game options is the so-called space race (Space Race), designed to perform the test by teams (it could also be played individually), with an interface similar to that of a contest based on a competition between students (Narbón and Peiró, 2018), in which students can visualize the progress of each of the participating teams. This

configuration is, from our point of view, the one that offers the highest degree of gamification of the three platforms reviewed.

Other game alternatives are the Quiz or standard questionnaire and the Exit Ticket or final question, with which the general concepts worked on at a given moment in the teaching-learning process can be assessed (normally used at the end of an explanation).

Once the game is over, the results obtained by the students can be viewed and exported to Excel or printed in PDF, which facilitates the teaching work when compiling numerical grades and therefore reduces the time and work involved in correcting written tests (Forteza, 2019) (see Table 2).

Table 2. Comparison of the possibilities offered by these platforms to evaluate musical content

Musical content	Platform tools		
	Kahoot!	Plickers	Socrative
Sound qualities: definition	Using multiple choice or dichotomous questions	Using multiple choice or dichotomous questions	Using multiple choice, dichotomous, or short-answer questions
Sound qualities: discrimination	By embedding videos	Through multiple choice or dichotomous questions and use of external auditory resources	Through multiple choice or dichotomous questions and use of external auditory resources
Auditory discrimination of musical instruments	By embedding videos	Through the use of external auditory resources	Through the use of external auditory resources
Visual discrimination of musical instruments	By inserting images or videos	By inserting images	By inserting images
Classification of instruments by families	Using multiple choice or dichotomous questions	Using multiple choice or dichotomous questions	Using multiple choice, dichotomous, or short-answer questions
Hearing discrimination of musical genres and styles	By embedding videos	Through the use of external auditory resources	Through the use of external auditory resources

Musical content	Platform tools		
Auditory discrimination of human voices	By embedding videos	Through the use of external auditory resources	Through the use of external auditory resources
Classification of human voices	Using multiple choice or dichotomous questions	Using multiple choice or dichotomous questions	Using multiple choice, dichotomous, or short-answer questions
Recognition of elements of musical language (compass, musical figures, musical notes, among others)	Through multiple choice or dichotomous questions and the insertion of images or videos	Through multiple choice or dichotomous questions and the insertion of images	Through multiple choice, dichotomous or short answer questions and the insertion of images
Rhythmic pattern discrimination	By inserting images or videos	By inserting images	By inserting images
Discrimination of melodic patterns	By inserting images or videos	By inserting images	By inserting images
Contents related to the History of Music	Using multiple choice or dichotomous questions	Using multiple choice or dichotomous questions	Using multiple choice, dichotomous, or short-answer questions

DISCUSSION

The platforms analyzed in this study combine SRI and GRSSR, which puts gamified methodologies in the classroom into practice aimed to support and simplify the evaluation processes. However, although there is an important body of research showing the benefits of Kahoot!, Plickers and Socrative in the educational field, the evaluation of musical content using these tools lacks relevant studies and, fundamentally, practical contributions and classroom experiences that facilitate the work of teachers interested in using them; this aspect is one of the most significant limitations of the work presented.

Therefore, the analysis carried out, although it does not offer supported results in the implementation of these three platforms in the elementary music classroom, intends to show their possibilities as facilitators of the evaluation processes of concepts related to musical expression and perception, as well as their ability to merge qualitative and quantitative procedures with which to complete the mandatory evaluation reports for this curricular subject.

To this end, the contributions of different authors have been taken into account, which, once studied, have been extrapolated to the field of music teaching at school, offering various strategies to facilitate, as far as possible, the work of the teacher, the main agent in the evaluation of students.

CONCLUSIONS

Current educational legislation, which establishes the curriculum for primary education in Spain, defines the basic evaluation criteria for music education, together with the temporal margins for carrying out the evaluation processes.

Assessing the musical abilities of students, due to the very nature of this subject, forces teachers to implement different strategies to collect both qualitative and quantitative data, numerical ratings of students and to complete the reports required by the educational administration.

In this sense, ICT have brought new ways to collect information on students' progress from different perspectives, streamlining the evaluation processes, while making them more engaging and relaxed.

Kahoot!, Plickers and Socrative are digital platforms designed to implement evaluation processes in a simple and dynamic way, with which it is possible to collect data in real time in a non-intrusive way, with immediate positive feedback and a significant decrease in the stress levels typical of conventional evaluations. In addition, different researches show that its simple and visual interface, as well as its easy handling, favor a gamified and motivating environment for students.

This study aims to inform music education teachers about the basic characteristics of these platforms, their possibilities in the evaluation of music teaching-learning processes, the musical contents that can be evaluated and the tools for this purpose. This is based on the experiences of different primary education courses.

From this perspective, these three tools offer the possibility of planning evaluation activities in a simple and intuitive way to check the musical knowledge acquired by the students, while facilitating the teaching work that, at times, can be long and tedious. They also provide students with the possibility of being direct participants in the evaluation process, increasing, as shown in several of the studies presented, their levels of motivation and responsibility. Similarly, they offer the possibility of designing tests from a more qualitative point of view, in which observation and interpretation of results become essential assessment tools, which help to capture observations through graphs and percentages that will facilitate the task of completing individual evaluation reports.

The implementation of ICT in the evaluation process encourages two-way teacher-teacher action, creating more collaborative and democratic evaluation models, which promotes a more active role for students and, therefore, from more critical and conscious positions.

It is important to remember that the abuse of ICT tools can "burn them out", so that they would no longer fulfill one of their main objectives: student motivation, a situation in which other benefits would be seriously diminished. In this sense, it is convenient to learn how to use them properly and combine them with other similar digital tools or with more traditional strategies.

Finally, it is important to be thorough in a pedagogical sense regarding their implementation. Therefore, it will be necessary to include their use in classroom programs and justify them properly, taking the classification and systematization of criteria and standards into account, which will ensure a more successful evaluation process.

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