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ASSESSMENT FOR LEARNING WITH MOBILE APPS: EXPLORING THE POTENTIAL OF QUIZZ IN THE EDUCATIONAL CONTEXT

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ABSTRACT

The use of mobile technologies and applications provides teachers a wide range of possibilities, both, in the teaching process and the assessment for learning. Nowadays, there are several applications to support the whole teaching-learning process, such as Kahoot, Socrative, Plickers, Gosoapbox, iClicker, etc. In this context, this paper aims at describing the potential of Quizizz as a valuable tool in education, taking into consideration that the use of quiz-type applications, if well planned, can motivate students, drawing their attention to achieve better results in the classroom.

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INTRODUCTION

Education is experiencing times of change in several aspects. From those changes, the role of teaching methodologies is highlighted as an emerging challenge of contemporary society. Accordingly, it is required from students to be more dynamic, up-to-date, autonomous and capable of providing creative solutions to daily problems. Other changes are also reflected in the classroom layouts, as well as on the content, materials, didactic resources and skills to be achieved. The profile of students has changed together with teachers' needs to review their pedagogical practices. Hence, from teachers is required to integrate more up-to-date strategies in the classroom, to give a more practical approach to the content taught, and to shift the individuals' minds from being merely information consumers to become content producers, instead. The aforementioned idea is under Alan's study (2015, p. 68) that identified young students have as a characteristic "the high use of smart phones and the internet, intense presence on social networks, great interest in virtual content and criticism of the 'backward' character of the school and the teachers".

Some debates emerge from this scenario, pointing out several solutions, as for example, the active methodologies, which may help with the process of integrating technologies and promoting different ways of transmitting the contents. Some of the active methods are the project-based learning, case study-based learning, think-pair-share, station rotation, flipped classroom, among others. However, in education there is no one size fits all approach, so, there is a need to combine different methods to attend current demands of the society, the schools and the different groups of individuals. Learning is a dynamic, complex process and involves a series of steps needed for the experience to be rich, meaningful and lasting. According to Moran (2015, p. 28), "we learn intentionally and spontaneously, while we study and have fun. We learn from success and failure". Therefore, the school should offer students not only lectures and dialogues but also the opportunity to: conduct experiments, communicate, build prototypes, solve mysteries, program, use different technologies, etc. This diversity of tasks may provide the challenges that the students may need, especially when they enter the university and later, into the job market. In this context, technologies become a crucial part of the classroom, contributing to the learning process through simple tools, such

as the use of the computer and the data projector. Those resources precede the use of more advanced technological devices, such as tablets, cell phones and other tools and applications. This combination of active methodologies (in which the student is in the core of attention and practical interactions are approached in the classroom) and the use of digital information and communication technologies (ICTs) have made possible an emergence of a hybrid teaching, which may be a mix of conducting didactic activities using both, onsite and online sources. Technologies can be used in a very diverse way inside the classroom, it will depend on the teacher's planning and creativity, for example, by conducting online forums, dynamizing experiments with virtual reality, doing simulations, or by carrying out exercises, tasks, competitions through the virtual environment. Besides, technologies may be used not only for teaching and learning but also to guide the assessment for the learning process. Bernardo (2018, p. 2) states that "to evaluate is to follow the student's development and to identify problems and to provide elements for them being able to solve problems by their own". Teachers are increasingly using innovative ways to check whether or not knowledge is acquired by the students. For this purpose, blogs, mind maps, wikis, digital books, applications and other devices have been used and are well accepted in the educational context. For Demo (2008, p. 12), "teachers must not lack the skills of the 21st century if they want to train children for the 21st century".

Students need to develop skills required to contemporary society, such as: communication, collaboration, creativity and critical thinking. That is to say, traditional techniques are no longer encompassing the aforementioned skills (National Education Association, 2012). In this sense, active methodologies and ICTs can offer new veins to develop key competencies, helping students to understand the evaluation as a formative and non-punitive step of the learning process. Regarding mobile technologies, teachers can use smart phones and their devices (digital camera, audio and video recorder) to produce content. Also, teachers can establish a variety of strategies to assess students more quickly and creatively, always taking into consideration the specific purposes of technological applications. Indeed, some of those applications are specifically designed or can be adapted to evaluation purposes. For example, Quizzes applications are practical and dynamic ways of proving students' knowledge. Multiple-choice or dichotomous questions, e.g. true or false type are used in those types of tests. Quizzes are usually administered at the end of a class (or throughout the training process), but they can also be used at the beginning of training to verify students' prior knowledge (diagnostic evaluation). The use of quizzesis usually associated with educational digital games, mainly because most of them recur to gamified mechanics such as the use of points, ranking, prizes, badges, rewarding, etc. However, the use of quizzes in the classroom is not new, once it has already been used before, through other tools such as on the Internet, PowerPoint (Esteves and Alves, 2017) or in virtual learning environments, online and offline (Costa et al., 2011). Currently, teachers can recur to several applications. One of the most known is the app Kahoot, to assess students in a fast, playful and attractive way. According to Wang (2015, p. 221),

Kahoot! is a game based on student responses, that temporarily turns the classroom into a game-show. The teacher plays the role of the presenter and the

students are the competitors. The teacher's computer must be connected to a large screen that projects questions and answers, students, in turn, input their answers as quickly as possible on their own digital devices.

Kahoot is used at different levels of education and has become so popular that nowadays is used even for recruitment processes and friends' meetings. However, like Kahoot, there are other similar applications to evaluate students through multiple-choice questions, such as Socrative, Plickers, Gosoapbox, iClicker, etc. Although all the aforementioned applications have their advantages and disadvantages, this paper goes further on the use of Quizizz app in the educational context, considering it is still underexplored in the Portuguese-language literature. This application allows classes to be more interactive and practical. So, the goal is to answer the following research questions: how can Quizizz become an educational tool? Which educational experiences are available online? How can the teacher explore Quizizz in an educational context? Which advantages may emerge from the use of this tool?

The objectives of this article are to conceptualize and identify the Quizizz application as an educational tool; to analyse and present data from empirical experiences in which Quizizz has been used in an educational context and to consider educational possibilities for the tool in the classroom. Since 2013, UNESCO has emphasized the need to use mobile devices in education, as well as training teachers, so they can make conscious and rich use of 21st century opportunities for students (UNESCO, 2013). Then, the discussion about applications and mobile devices is crucial, as it offers teachers opportunities to expand their knowledge and reduce prejudices and barriers regarding the use of these resources in the classroom. The motivation to investigate this topic emerged from the previous experience of the researcher with the pedagogical exploration of mobile applications in different learning contexts, including basic and higher levels of education (Moreira et al., 2019; Bottentuit Junior et al., 2018; Araújo and Bottentuit Junior, 2015).

Learning assessment with *Quizizz App*: Learning assessment is a controversial topic nowadays, that is because it has been proving that individuals learn through several means and have different forms of acknowledging information and build it into knowledge. For some individuals, to express themselves orally seems easier whereas for others, it is effortless to express their ideas through writing. Some theories support this fact, among them, it is the learning styles theory, which describes, according to Barros and Amaral (2007, p. 14) "one's highly individualized permissions and tendencies, which are influenced by their way to understand a content". Other theorists also point to the fact that multiple intelligences may impact the way of learning. For example, according to Gardner (1996), there are 8 (eight) types of intelligence: linguistic or verbal, logical-mathematical, spatial, musical, bodily synesthetic, naturalistic and personal - inter and intra. For this author, the intelligence would define how hard or easy it is for individuals to learn certain contents or school subjects. Regardless of those theories, there is an increasing interest in the application of mobile technologies apps at all levels of education. Students are attracted by multimedia resources and the dynamic way the content can be transmitted through those media.

As aforementioned, technological applications are varied and allow multiple uses. Carvalho (2015, p. 10) points out that:

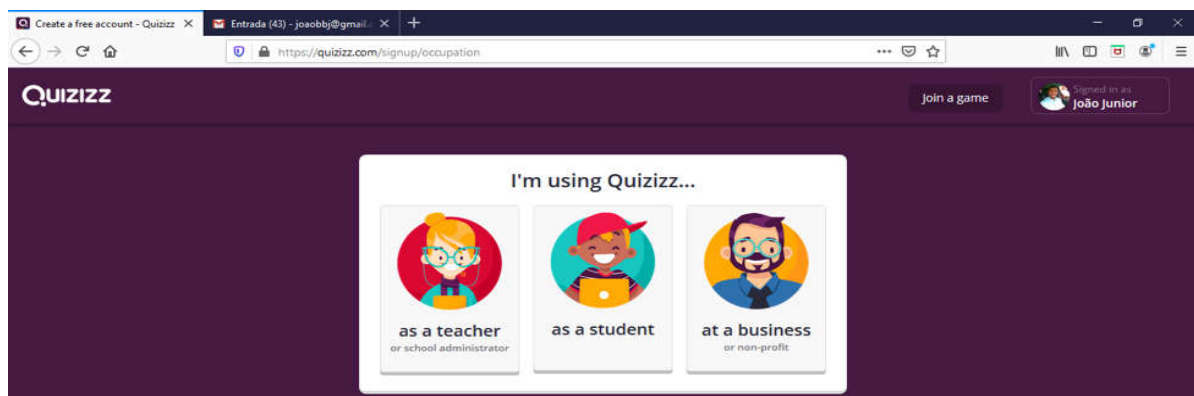
(...) there is a need to involve students in active and interactive learning, considering three main axes of intervention in an educational and training context, namely the: probe and test, knowledge representation and challenge to learn.

According to Carvalho (2015), the purposes of each application can be categorized according to their use and educational purpose. This paper aims to explore those that can be applied to surveys or evaluation purposes. Evaluation can be divided into diagnostic, formative and summative. As such, the present study will approach the diagnostic and summative assessment types present in Quizizz app, considering the system only performs multiple-choice tests. According to *Quizizz*¹, website, the app was created in 2015 by two Indian teachers, Ankit and Deepak, who designed the system considering their background in teaching mathematics at a school in Bangalore (India). Nowadays, Quizizz is used by millions of teachers and students in more than 100 countries and has offices in Bangalore and Santa Monica (United States). Zhao (2019) states that Quizizz is an educational game-based app, which allows multiplayer activities in simultaneous and convert classroom exercises into a more interactive and fun experience. When using Quizizz, students can apply the knowledge acquired in the classroom, recurring to their own electronic devices.

On the one hand, Quizizz has game features, such as avatars, the matical environments, memes and music, which brings fun into the learning process. It allows students to compete with each other by motivating them to study, this is because they can take the tests in the classroom while seeing their ranking in real-time. On the other hand, teachers can monitor the whole process and download the student progress report when the test is completed, so they can assess each individual's performance. The use of this application helps to stimulate students' interest and improves involvement in the classroom (Zhao, 2019). According to Martínez (2017, p. 687, author's translation),

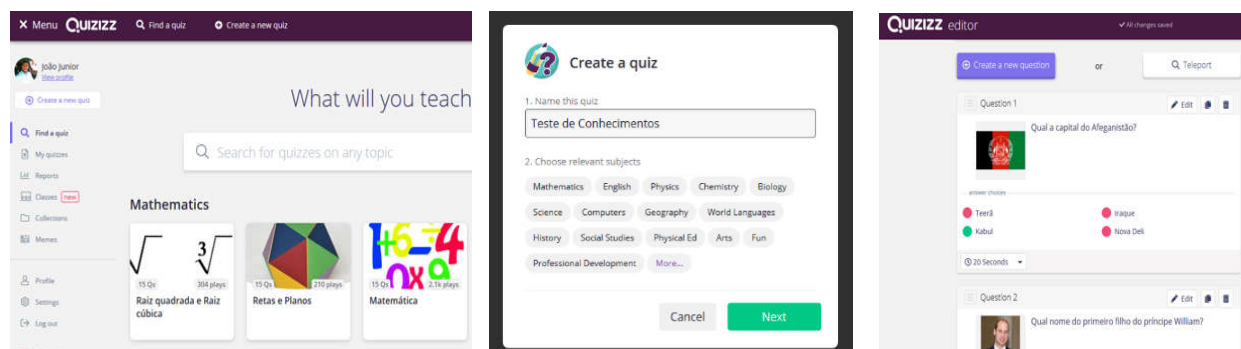
This platform does not require any specific computer skills or resources, which makes it easily applicable by the teacher, who can start using it with a simple login, being able to create questionnaires with titles, images and multiple answer options.

To access the platform, the teacher must go to the website <http://quizizz.com> and then create an account by clicking on the sing up button, or through the login button, if he has already a register. To facilitate the process, the application offers the possibility to take advantage of Google credentials, login in with a Gmail account, shortening the process. Once registered, the platform will require the user to identify his or her profile. In this case, the user can select the option to login in as a teacher, student or at a business (see Figure 1).



Source: Quizizz print screen

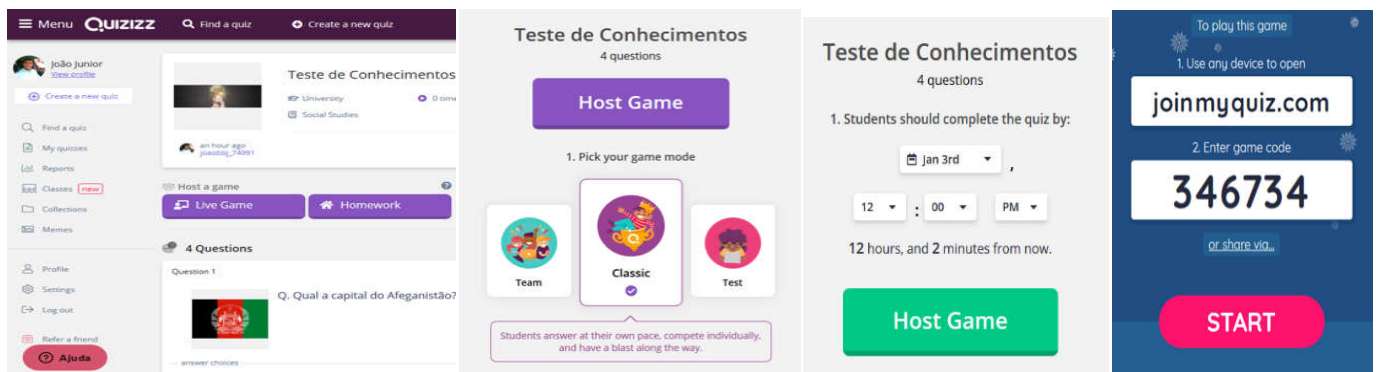
Figure 1. Selection of the user profile



Source: Quizizz print screen.

Figure 2. On the left side, the screen shows as an option to pre-made tests, in the centre of the screen there is the option to create a customized test, on the right side, an example of completed tests


¹Available at <https://quizizz.com/about>




Source: Quizizz print screen.

Figure 3. On the left side of the screen, there is the option to take the quiz in the classroom (or as a class assignment), after that, there is an option for the teacher to select how the class will be conducted (whether in person or as a homework assignment), then the possibility of establishing a day and period to complete the tests and, finally, on the right side, there is an option to select the pre-made questionnaires

1. Select or upload an image

Select a meme 

2. Add the caption



3. Name your meme

Enter name

Source: Quizizz print screen

Figure 4. Tool to create memes at *Quizizz*

After selecting the profile, the system will offer some pre-made tests - quizzes (developed by other users), making the process easier for the teacher to apply quizzes at the classroom, or the option to create personalized questions (see Figure 2). After creating a quiz, teachers may apply it in the classroom by using direct interaction (live game) or sending tasks to be made at home (homework). In the second option, teachers must define a limited day and time for the tasks to be completed. There are two main advantages in using this resource, first, because it creates in the students a sense of responsibility to complete the exercise in the stipulated time; second, because it is a time-saving tool, once the system itself performs automatic correction and the attribution of marks for the students. Quizizz also offers the possibility to work individually or by teams. According to Ferreira (2018, p. 59), "collaboration is characterized as a recursive process in which two or more people or organizations work together to achieve common goals, through knowledge sharing, learning and building consensus". Thus, to promote collaborative practices among students is vital for creating better relationships, improving dialogue and building knowledge together. For students to have access to quizzes created both in the

classroom and on assignments, they must access a specific website, joinmyquiz.com, and enter the code to view the questions prepared by the teacher. Furthermore, the tool also offers an additional feature, which is the possibility of creating memes. Memes are resources that involve image and entertainment, as students need to choose an image and, from it, establish creative phrases to express a playful message. For Duque-Pereira and Rangel (2019, p. 9), "memes can be perceived as components of the communicational process in contemporary times, contributing to the discursive engagement on the cyberspace". Although memes play an enjoyment role, they are being studied and used as an educational tool both in Brazil (Calixto, 2017; Andrade, 2018) and abroad (Alves, 2017). Memes can crank up students' creativity, improving writing and teamwork (see Figure 4).

Like any other application, Quizizz has several advantages and disadvantages, from which can be highlighted:

- The possibility of using only mobile devices in the classroom, without needing any data projector nor

computer, this is because the quiz can be accessed via cell phone or tablet;

- It is a multiplatform system which can be used in computer labs, conventional computers or through mobile devices (cell phones and tablets);
- It is available in both operational systems, iOS or Android;
- It allows individual and collaborative work, as students are able to access the quiz on their own devices and share it with a team;
- There is no need to download any application to use the quiz. By using the page joinmyquiz.com and the code provided by the teacher, the students can access the questionnaire;
- It is possible to create quizzes for students to answer homework assignments, establishing a deadline with day and time;
- Quizizz has a game-based design and recurs to gamified mechanics such as music, rankings, scoreboard, avatar time, etc. These elements are mind activators and motivate individuals to remain active in order to be successful;
- It allows the creation of short or long questions, stipulating a time to answer between 10 seconds to 15 minutes;
- It allows the creation of public (shared with everyone) and private quizzes (only accessible to those who have a code);
- It allows the insertion of images or videos related to the questions, and to use formulas and symbols;
- It allows searching for ready-to-use quizzes and ready-made questions from several quizzes that are open-access in the database;
- It analyses the performance of each student or the entire group using an Excel spreadsheet, it also imports students' grades into an electronic or physical diary

Some disadvantages are mentioned as follows:

- The fact that the platform is available only in English is a limitation for teachers who do not speak the language;
- The use of the platform is only available online, so it is needed internet connection for creating and responding to the quiz;
- For each quiz question is only accepted one answer to be registered as the correct one;

When considering the use of Quizizz in education, literature lacks experiences published in Portuguese. Most of the studies were carried out in the United States, Europe and Asia. Some of those, listed on Google Scholar are highlighted above. Melo (2019) conducted research addressing the use of Kahoot and Quizizz in research methodology disciplines with a group of students from four different technological computing courses. According to the author, both tools are valid strategies, that recurs to scoring techniques, awards and other mechanics to involve students in learning, increasing their motivation. González (2019) in his master's dissertation, conducted a study using the apps Kahoot!, Plickers and Quizizz for learning assessment. The results evidenced how promising those tools are to increasing students' grades and their satisfaction with learning the content studied. A third study by Martínez et al.

(2018) used Quizizz as a gamified tool capable of improving the learning process and motivating students. The experiment was carried out with a group of undergraduate students in Tourism. According to the authors, 84% of the students showed to believe they improved their learning process with the use of the Quizizz tool, while 78% felt motivated to study the subject. In addition to the aforementioned studies, the works of Silva (2019), Rodríguez et al. (2019) and Quispe (2019) were also verified for using Quizizz in an educational context. The studies led to a similar conclusion that the gaming dynamics in teaching is facilitated by ICTs, which makes Quizizz a very useful methodology in the higher education environment.

Conclusions

The use of digital resources in the classroom can increase the interest of students, besides facilitating the understanding of various phenomena and theoretical aspects that would be more complex to assimilate without the use of those technological devices. Even though ICTs have brought benefits for education, there is still a need for adopting them as a long-term planning methodology/strategy, so then educational objectives can be satisfactorily achieved. Thus, taking into account the initial questions listed, some considerations are addressed. First, how can Quizizz become an educational tool? The app allows students to shift from their regular role as mere spectators to be protagonists during the learning process. The use of this type of tool draws students' attention, as many of them are familiar with the tech apps and digital games world. Therefore, combining didactic content with what they already know from their daily lives is a valuable asset in education. Second, which educational experiences are available online? Although there are not so many studies in this field, most of the identified studies are from 2018 to 2019 (considering papers and master's thesis), many of them published in Europe and the United States. This can be explained by the fact that digital technologies are normally used in schools that have access to better infrastructure and to more qualified and motivated for new didactic experiences teachers.

Third, how can teachers explore Quizizz in an educational context? The results indicate that the way to explore this tool in the classroom can be quite diverse. This is because teachers can use it, in both, real-time assessments during the classes or can choose to send tasks for students to answer at home. Finally, considering the advantages that this tool may offer, they are mainly related to learning by playfulness, creativity and connectedness. Altogether, they can be valuable strategies to motivate students and to engage them to learn the subjects required by the school as well as to help them to develop the skills demanded by contemporary society. Summarizing, the tool showed to be a quick, safe, intelligent and easy to use tool which offers several resources to facilitate and manage the creation of questions in the educational context.

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