MILAGE LEARN+: PERSPECTIVE OF TEACHERS

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Abstract

The development of technology has contributed to enormous changes in society, in interactions and communications. These changes are also reflected in education.

MILAGE LEARN+ is an application for mobile devices that has been developed at the University of Algarve with the support of the ERAMUS+ project with partners from Portugal, Spain, Germany and Cyprus, enabling students to access educational content in and outside the classroom. The App works as a support tool for students which provides them the opportunity to solve tasks autonomously. In order to stimulate and support the implementation of the various activities proposed, MILAGE+ LEARN+ App interface incorporates gamification features and segmenting different levels of activities. The app provides detailed videos with the solution of problems and self-assessment scheme and peer review.

A questionnaire was addressed to all teachers trained to use the MILAGE LEARN+ platform. This questionnaire includes thirty-one questions, of which four are open-response and twenty-seven are closed-response.

In this paper we present how teachers, use this learning platform in their classroom, how often, with what intention, identify application weaknesses and identify new features to be developed.

Keywords: education, technology, learn, APP, teacher, MILAGE LEARN+, digital education.

1 INTRODUCTION. TECHNOLOGY IN CLASSROOM

The 21st century brings numerous challenges in educational systems. The amount of information available, all the scientific and technological advances, make it urgent that schools keep up with this evolution, committing themselves to establish connections and create conditions for the development of skills and formation of identities.

The use of technology in the classroom has been a huge challenge. The use of computers, tablets, and smartphones in the classroom context has increased. Today's students are digital natives, as Gomes states "It is up to the teacher to gather skills in all the technologies at his disposal to experiment and choose, at each moment, the one that seems more effective for the objectives that is proposed" (p.20) [3].

This generation is definitely different from earlier generations, and "education should not focus on transmitting knowledge, but on teaching students how to learn. Teachers should shift from lectures to interactive, collaborative guidance, and let students explore and discover on their own."(p.4) [10].

It is important that teachers prepare learning scenarios that contemplate pedagogical differentiation and consistent formative assessment. The relationship and fusion between pedagogical models, learning scenarios, and technologies must be carefully established. It is clear that students today have a huge fascination with digital learning environments, we cannot ignore this fact and it is important to put technologies at the service of education.

It is in this context of transformation, that "technologies have a huge potential to enhance the pedagogical process, and should assert themselves, embedded in digital learning ecosystems, as a means to help students think, solve problems, create and collaborate with others"(p.10) [6].

In this paper, we present a study on the use of the MILAGE LEARN+ application [5]. This App incorporates pedagogical differentiation (including low and high achievers), contains a gamification system, allows real-time formative evaluation, promotes students' autonomous work, and allows the monitoring of the whole process through a platform for the teacher. This study is based on the perception of teachers who have received training and their expectations of using it in the classroom.

2   MILAGE LEARN+ APP

The free MILAGE LEARN+ APP for mobile devices and computers (iOS, Android, Windows and OSX) allows students to access educational content in online, blended or flipped learning. This app is a tool to support students in the autonomous solving of problems implementing a pedagogical model that includes gamification, self and peer assessment.

In order to motivate and include all students, the MILAGE LEARN+ APP incorporates gamification features with different levels of complexity of exercises to support students with greater difficulties in mathematical learning and also include more advanced students. This concern in including all students in the process is also reflected when this APP presents detailed videos, with the resolution of exercises for those students with more difficulties can see step by step their resolution, and concise videos with the essential steps in the resolution of an exercise.

The MILAGE LEARN+ APP also includes a self and peer assessment that aims to stimulate the student's autonomous work, to revise content for the storage of knowledge in long-term memory and to identify key steps in the resolution of exercises.

A free MILAGE LEARN+ TEACHERS application is also available for teachers to create content for students and follow the students' work.

At the moment, in the MILAGE LEARN + app there are more than 25 000 tasks and their educational video solutions from 1st to 12th year of math for the Portuguese, Germany, Spain, and Cyprus curriculum. Available since September 2016 there are about 100 000 students who use this app also available in German, Spanish, English and Greek.

A partnership is established with the Portuguese Ministry of Education that supports two teachers for the MILAGE LEARN+ project, a Math and Portuguese language teacher, to disseminate the APP MILAGE LEARN+ in all schools in Portugal for the school year 2021/2022. A partnership with the Portuguese Association of Mathematics Teacher, Spanish Federation of Math Teachers, German Association of Math and Science Teachers and the Cyprus Society of Math Teacher to disseminate and ensure that all teachers have the training to develop digital skills.

3   METHODOLOGY

From March 26 to April 8, 2022, an online questionnaire was administered to Portuguese teachers trained to use the MILAGE LEARN+ platform. This questionnaire consisted of 31 questions, of which four were open-ended and twenty-seven were closed-ended.

631 teachers responded to the questionnaire. All these teachers authorized the collected information to be studied.

4   RESULTS

The teachers are from different disciplinary groups, but one of them stand out, 53.6% from the Mathematics group.

Regarding the most used resources in the classroom (Figure 1), there is a great emphasis on the manual and the projector, and then the use of tablets/laptops/computers, scientific calculator, mobile phone, graphing calculator and interactive whiteboard is highlighted.
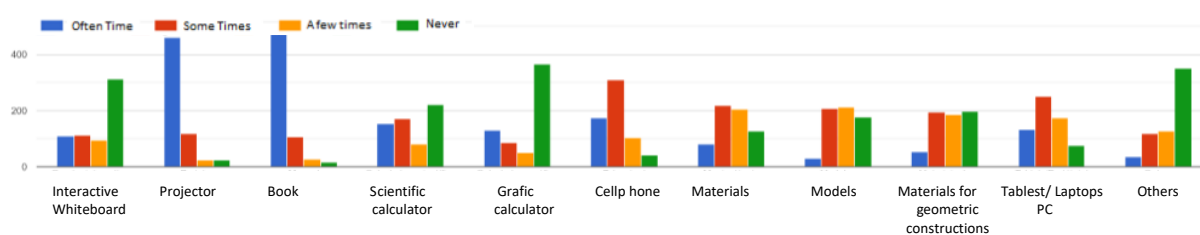

Figure 1. "What resources do you propose to students in the classroom?",
Questionnaire applied to teachers about MILAGE App, 2022.

After training, 68.8% of the teachers continued to use the MILAGE APRRENDER+ App as a learning platform in the classroom. And of these 10.1% said they used it more than once a week, 26.1% once a week and 23.9% biweekly and 39.9% reported using this App monthly.

The tasks that teachers propose most often in the classroom (Figure 2) are exercise solving, problem solving, research, explorations, and projects.
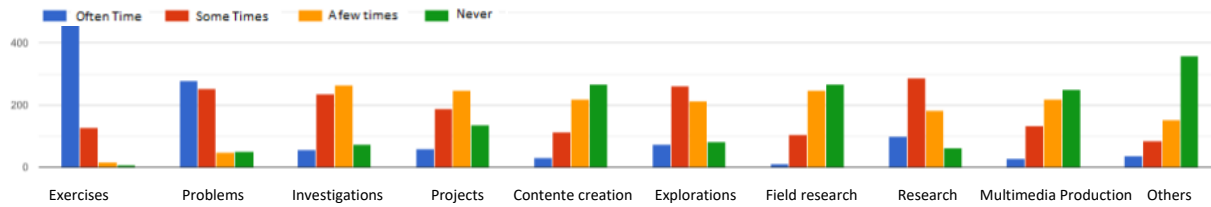

Figure 2. "What tasks do you propose to students in the classroom?, Questionnaire applied to teachers about MILAGE App, 2022.

Still in the perception of user teachers (Figure 3), and on a scale of 1 (not at all motivated) to 4 (very motivated), 46.6% of students when using the MILAGE APPRENDER+ App are at level 3 and 45.2% are at level 4.
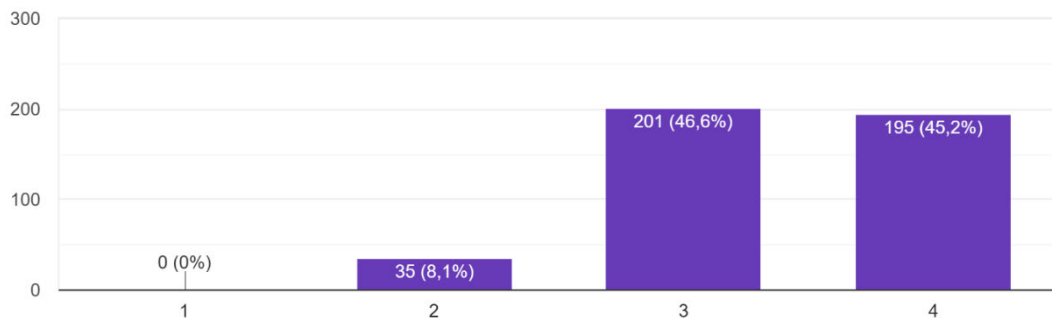

Figure 3. "According to your experience, when students are using the MILAGE LEARN+ App they find themselves…", Questionnaire applied to teachers about MILAGE App, 2022.

When asked if they consider it important for an educational APP to associate analogue to digital, 99.8% of the user teachers answered yes, there is clear evidence of the importance that teachers give to this association in student learning.

Teachers who use the App consider that the type of tasks that most motivate students (Figure 4) are the multiple-choice exercises (72.6%) and the open-ended camera tasks (68.7%) that allow them to associate analog and digital.
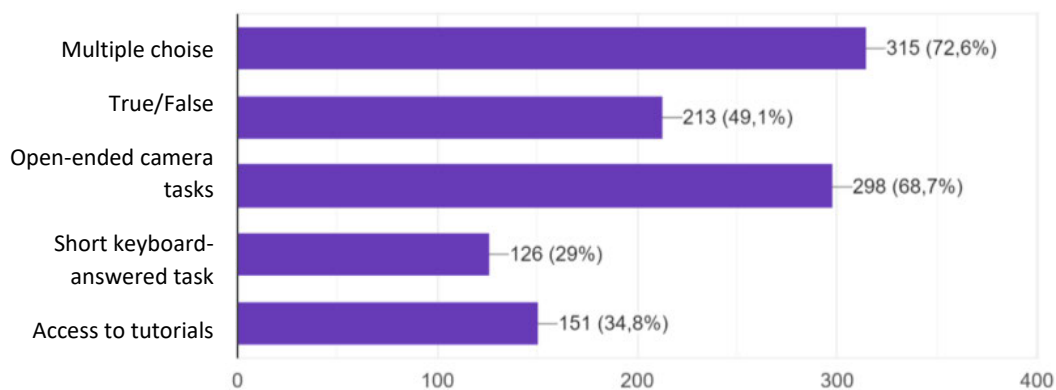

Figure 4. "What type of assignments do you feel motivate students the most?", Questionnaire applied to teachers about MILAGE App, 2022.

The MILAGE APPRENDER+ App allows student self-assessment (Figure 5), and 32.7% of user teachers consider that self-assessment always allows self-regulation of learning, while 62.7% almost always refer. There is a clear identification that this functionality is important for students to be aware of the progress of their learning.
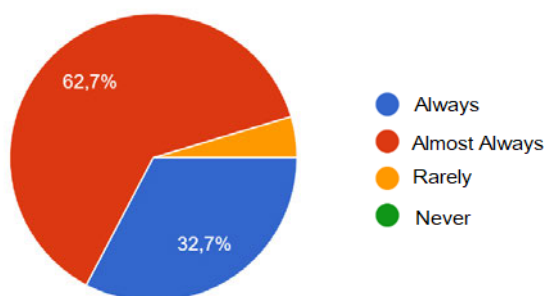

Figure 5. "Do you consider that the self-assessment, existing in the MILAGE App, allows the self-regulation of learning? Questionnaire applied to teachers about MILAGE App, 2022.

On the other hand, the MILAGE App also allows the assessment of the pair by the student, 27.2% of the user teachers consider that this functionality always allows the consolidation of student learning and 59% say that this consolidation occurs almost always. There is clearly an identification that peer assessment is important in the process of consolidating learning.

Gamification is very present in the App MILAGE (Figure 6), through the award of points, 50.7% of teacher users consider that this fact always contributes to the motivation of learning and 43.8% mentioned almost always. The vast majority of teachers and users believe that this is undoubtedly a factor that enhances the motivation of pupils.
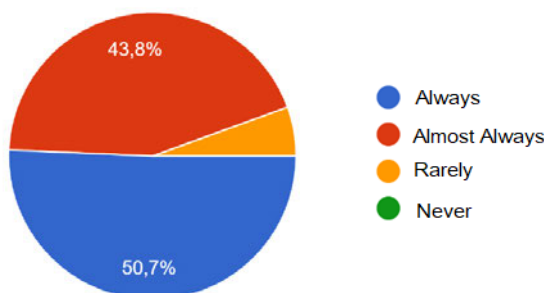

Figure 6. "Do you consider that the gamification present in the App MILAGE, through the assignment of points, contributions to the motivation of learning?", Questionnaire applied to teachers about App MILAGE, 2022.

When asked to the 197 non-user teachers about the reasons why did not use the MILAGE LEARN+ App after having completed training, teachers highlight four main reasons: lack of equipment of students (43.7%), problems of internet connection at school (33.5%), lack of resources of the taught discipline (33%) and lack of confidence (19.8%).

All teachers were asked about the new features that the Milage App should have, and in a closed-ended question, they were asked whether they considered three specific aspects (Figure 7). 573 respondents considered it important that the platform allow new motions for resolutions to be inserted and their respective scoring proposals, 536 considered it important to allow teachers to interact with each other, exploring methodologies in each task, and 579 considered it important to allow access to the learning scenario(s) of each task/sheet.
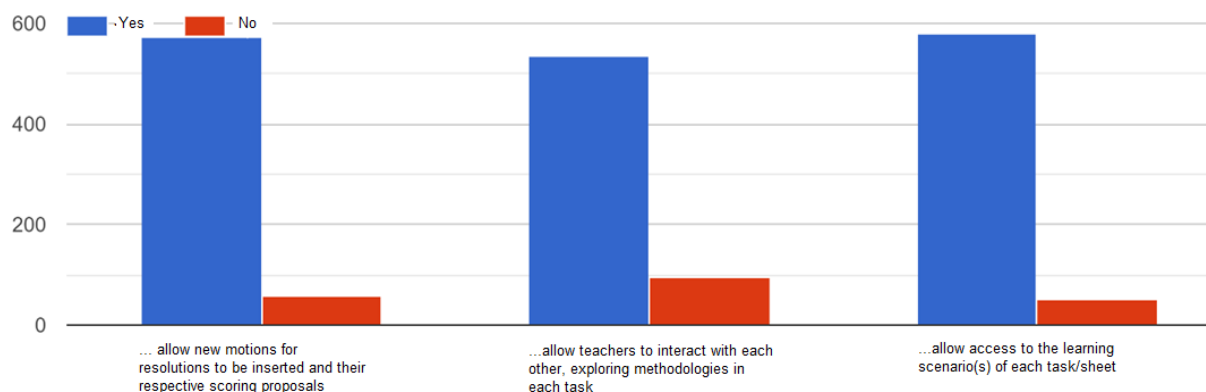
Figure 7. "Considers it important that the MILAGE platform...",
Questionnaire applied to teachers about MILAGE App, 2022.

It can be concluded that according to the perception of the teachers there are several important and innovative aspects that App Milage incorporates, namely: association between analog and digital, the existence of the gamification component, self-evaluation and peer evaluation as an added value for self-regulation and consolidation of learning. These potentials of the app are undoubtedly aspects that distinguish it from other platforms and that make learning possible in a differentiating and effective way.

5   CONCLUSION

Educational action can be understood as finding the best way and the most effective resources for all students to learn. There must be effective ownership of knowledge, skills and attitudes and development of key competences throughout compulsory schooling.

It was concluded that the MILAGE LEARN+ app is used by teachers to motivate students, propose exercises, solve problems. The type of tasks that motivate students the most are those that involve multiple choices and questions whose answer is submitted by the camera, allowing the association of analog (student's notebook) and digital.

Teachers believe that the fact that the app allows students to evaluate themselves allows for self-regulation of learning. On the other hand, the possibility of allowing peer evaluation enables content consolidation.

This app has a point system incorporated and according to the teachers, this is a factor that contributes to the motivation of students in the learning process.

The type of tasks proposed by teachers is diverse depending on the students, the way each teacher creates the learning scenario when incorporating the application depends on the contexts, and the technological conditions that make the MILAGE application possible depend on each school.

However, there are aspects that could be improved. An investment is needed in the creation of content for those disciplines that lack tasks. There has to be a great commitment to the training of teachers who are authors in the various disciplines, and subsequent monitoring so that this application is accessible to all.

It seems that this application can adapt to different realities, contexts and situations, making the teaching process more individualized and learning more attractive, engaging and dynamic.

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