

# A MICROLEARNING APPROACH BY THE #ESTUDOEMCASA APOIA PROJECT

C. Torres, H. Liberato, A. Fernandes, L. Brito, M. Covas

*Ministry of Education of Portugal (PORTUGAL)*

## Abstract

*#EstudoEmCasa Apoia* is a project from the Portuguese Ministry of Education that was created to suppress the need students felt to overcome and recover lost learnings, mainly after the COVID19 lockdowns that began in 2020. *#EstudoEmCasa Apoia* is a free-access platform, mainly directed to students but accessible to all, where different pedagogical contents – escape rooms, webinars, podcasts, quizzes, games, online courses, amongst others – are available. These resources, that grow in number every day, embrace the different subjects and areas of knowledge, levels 1 to 12, from the Portuguese curriculum. All of them were created by a group of teachers who studied the best way for students to access them, use them as means of study, while acquiring knowledge in an autonomous manner, where and when they want. The objective with this project and its content is to complement teachers' work at school and give students the opportunity to learn by themselves any subject they feel has not been fully attained or that they want to improve. This study aims at: a) showing the conception and creation processes of microlearning contents, bearing in mind the different design criteria defined by the teacher/expert of each area of study; and b) understanding how microlearning contents can impact and help students' autonomous learning and recovery of lost learnings, and work as autonomous learning boosters. The creation process is not centered on elementary learnings, as it aims at being interconnected with the context(s) the knowledge acquired will be applied to, as well as with other curriculum areas. At the same time, most of the microlearning contents available on the platform were created having in mind an aggregator concept, based on the construction of a narrative (storytelling) that allows students to study a learning sequence where each resource is not closed within itself, but rather continues to another one, may it be from the same subject or another one.

Keywords: Microlearning, Storytelling, Digital education, Digital resources.

## 1 INTRODUCTION

*#EstudoEmCasa Apoia* is a project from the Portuguese Ministry of Education that was created to suppress the need students felt to overcome and recover lost learnings, mainly after the COVID19 lockdowns that began in 2020. *#EstudoEmCasa Apoia* is a free-access platform (| *#EstudoemCasa@ (mec.pt)*), mainly directed to students but accessible to all, where different pedagogical contents – escape rooms, webinars, podcasts, quizzes, games, online courses, amongst others – are available.

These resources, that grow in number every day, embrace the different subjects and areas of knowledge, levels 1 to 12, from the Portuguese curriculum, including Portuguese for foreigners. Aiming at being an inclusive platform, some of the resources have Portuguese sign language interpretation. All these resources were created by a group of teachers who studied the best way for students to access them, use them as means of study, while acquiring knowledge in an autonomous manner, where and when they want. Some of the resources are also contributed from partners as school projects, teachers, and students. This platform has also resources for teachers, schools, and families, aiming to support all the school community in the daily work of developing the curriculum and students learning processes.

Redondo, Rodríguez, Escobar & Vilas (2021) define microlearning approach as a technique for distance learning, provided in small amounts of curriculum content topics that students can assimilate in short time periods with diversity and interactive formats. These challenges require teachers to work collaboratively, with the aim of frame and solve the many problems that arise in developing and adjusting the curriculum to microlearning approach. It also requires the ability to reflect on teaching practice and students' learning, creating dynamics that promote their professional development and the school culture (Hargreaves, 1998; Nunes, 2014).

Leong, Sung, Au & Blanchard (2021) highlight some of the key benefits of using microlearning approach that include, (1) better retention of concepts, (2) better engagement for learners, (3) improving learners' motivation, (4) engaging in collaborative learning and (5) improving learning ability and performance.

To evaluate the impact on students' learning with microlearning approach, some curriculum sequential digital resources were provided to three school' teachers.

This study aims at: a) showing the conception and creation processes of microlearning contents, bearing in mind the different design criteria defined by the teacher/expert of each area of study; and b) understanding how microlearning contents can impact and help students' autonomous learning and recovery of lost learnings, and work as autonomous learning boosters.

## **2 METHODOLOGY**

This study used an exploratory mixed methods research design, combining the quantitative and qualitative components of a research design (Greene, 2007; Creswell, 2009). This design was more appropriate because we wanted to explore and to explain the nature of teachers' challenges when developing Portuguese' curriculum while planning and producing resources, in the context of *#EstudoEmCasa Apoia* project.

The ongoing research was conducted in three phases over a 15-months period, from September 2021 to December 2022. The data were collected sequentially, using questionnaires Google Forms, TEAMS and ZOOM analytics was employed to provide information about teacher needs and regular meetings. This research is also supported on the observation of the students using the resources and the feedback of the teachers during teaching and learning processes. In this paper we present the resources "In defense of the Ocean" project developed by *#EstudoEmCasa Apoia* platform with the collaboration of experts and schools. Student's and teachers' opinions about the teaching/learning experience and the quality of the learning that took place were collected with questionnaires and semi structured interviews record in video.

## **3 RESULTS**

The results are organized according to the study aims: a) showing the conception and creation processes of microlearning contents, bearing in mind the different design criteria defined by the teacher/expert of each area of study; and b) understanding how microlearning contents can impact and help students' autonomous learning and recovery of lost learnings, and work as autonomous learning boosters using data from the "In defense of the Ocean" project.

### **3.1 The conception and creation processes of microlearning contents**

Project working processes has different phases. It starts with a year plan and the resources' structure made by the teachers' team, according to the national curriculum of each subject and national students' profile standards at the end of school certification.

Resources can contain curriculum microlearning content from one or more disciplines, organized in multiple sections: a mandatory section - "activity" and the other four are optional - evaluate, reflect, explore, and share. Each of the sections is designed and created to lead the student in a sequential learning and using the different approaches using short videos, podcasts, activities, games, scape rooms, webinars, quizzes, among others. At the end of each resource is presented a new proposal for appeal that, whenever possible, is articulated with the same theme or curriculum content designated "And now...". Some of the videos are produced by the team project and involving different phases of creation starting with a script and ending with the video realization, using audio, scenarios, and narratives, involving a multidisciplinary technician, as multimedia and audio, and teachers.

When the materials are organized it occurs the scientific and pedagogical revision made by one project coordinator, usually supported by a web meeting. At the third phase the teacher has the opportunity to reformulate the resource and upload it on the *#EstudoEmCasa Apoia* platform (Figure 1).



Figure 1. QR Code of #EstudoEmCasa Apoia plataforma.

Some of the teachers shared that this is a challenged work: *“For the teacher the challenge is to overcome himself, creating interesting resources, triggers of interest, autonomous use, but with scientific correction. The concern is related to the time of concentration of the students and the challenging intention of learning autonomously, without the teacher having the feedback in a timely manner. Give tools that the student can use and motivate him to know how to do it, doing. Thus, the resources must be interactive, short, dynamic, current, and correct”* [Teacher 1]. Another teacher shared, *“the conception and creation processes of microlearning contents let us recognize that the knowledge of the teacher’s technological means is often outdated in relation to the student, so creativity, pertinence, actuality, and ‘capacitating’ are fundamental elements to attract a population that is often not motivated. In essence, what motivates and challenges us, which causes us difficulties, increasing the fact that we do not know if we are being successful because it lacks the teacher-student interconnection that the classroom allows”* [Teacher 2]

Other challenges mention by the teachers’ is the collaborative work involving the revision process and external validation of all work. For most of this teachers’ this is a new working method that challenges each of them to be able to integrate feedback from peers and experts but also to expose their difficulties. Nevertheless, everyone recognizes the importance of this method as a catalyst learning processes and teachers’ development.

### 3.2 Microlearning contents as autonomous learning boosters

With the “In defense of the Ocean” project (Figure 2) developed by #EstudoEmCasa Apoia platform, opportunities have been created to discuss this theme through webinars and with the realization of a role play. Other initiatives and actions converge to this project. The objectives of this project are: 1) to promote ocean literacy; 2) foster attitudes conducive to their protection; 3) develop essential learning and competencies of the student's profile when leaving compulsory schooling.



Figure 2. QR Code of “In defense of the Ocean” project.

To achieve the proposed objectives, a role play was built with seven characters representing various sectors of activity linked to the Ocean. Seven webinars were held each representative of each of the themes and which are compiled in an ebook, as microlearning resources.

These webinars have had experts from different areas to help students and teachers understand the problems that affect the ocean to find solutions to support their sustainable development. These sessions also functioned as a starting point for the construction of several educational resources that enriched the project in defense of the ocean. The project also adds educational resources developed by students from partner schools making known the work they have developed. The target audience is the educational community, students and teachers of national and international schools, various

researchers, and other project partners, such as the "Blue School" (of the international network of blue schools).

The school dynamics began with the presentation of the activity and the roles were distributed by the groups. The students prepared their presentation and held a discussion in which each group defended and argued their point of view. Subsequently, they prepared a document with the final summary of the discussion.

The students' statements evidence the importance of these resources and activities: *"It was very productive. These activities give us voice and knowledge so that we can be citizens that are defenders of the sustainability of the planet"* [Student 1]. Another student referred, *"we have been involved in several discussions, but above all we achieve to solutions and consensus"* [Student 2]. The importance of webinar resources was also stressed, *"I learned a lot of things I didn't know, although It was linked to contents of science and physics and chemistry subjects"* [Student 3]. More, *"what we learn here and discuss we will take out there, to our families and friends"* [Student 4].

Also, the teachers referred that they were surprised with the potential of these resources and the activity of the role play: *"allowed to address several essential learnings from the curricula of Biology, Geology, Physics and Chemistry, but also from the field of citizenship, in particular environmental education for sustainability. In addition, students had to do research, critically analyze the information collected and organize it with criteria, but also problem solving and interpersonal relationship"* [Teacher 3]. One teacher emphasis that *"the role play was lived with intensity and fun. For me with a teacher it was a pleasant surprise. On the other hand, I was able to evaluate the students' learning, using scientific language in appropriate contexts. These resources have been incredible autonomous learning boosters"* [Teacher 4].

All work and knowledge were shared in a final student's forum that take place in Lisbon (June 2022), with the presence of specialists and politics. Students voice for the sustainability and defense of the Ocean was compiled in a document that was delivered at the 2nd United Nations Conference on the Oceans.

## 4 CONCLUSIONS

Evidence shows that the creation process is not centered on elementary learnings, as it aims at being interconnected with the context(s) the knowledge acquired will be applied to, as well as with other curriculum areas. At the same time, most of the microlearning contents available on the platform were created having in mind an aggregator concept, based on the construction of a narrative (storytelling) that allows students to study a learning sequence where each resource is not closed within itself, but rather continues to another one, may it be from the same subject or another one. This is the example of the resources from the "In defense of the Ocean" project and role play.

From all teachers, generally, its resources have as a strong point, the presentation of diversity of knowledge to solve a problem, having mobilized the work of its students through the production of home videos as result of research. Teachers' recording scripts are detailed, always including the indications suggested by the team to improve the understanding of students. Whenever it was possible, manipulate materials and different applications are used. Thought the year, there is a significant improvement in the quality of microlearning resources as result of research guidelines (Redondo, Rodriguez, Escobar & Vilas, 2021; Leong, Sung, Au & Blanchard, 2021).

Results sustain the importance of continuing with the projects of #*EstudoEmCasa@Apoia* platform as a catalyst for the participation of students, giving voice to students and promoting the competencies of the Student Profile to the Departure of Compulsory Schooling and the Interdisciplinary curriculum development. Also, microlearning approach and content inspired in Role play activities represents an autonomous learning booster. This sharing work enable students to build better strategies to overcome difficulties and problems, and a trust feeling which transforms a problem into an added value.

All teachers' work is focused on students learning autonomy using these resources. We also can highlight the richness that comes from collaborative work as the ability to share experiences (Nunes, 2014). By working in collaboration teachers recognize that it was possible to include in the different resources and invited aspects from different areas of curriculum that valued the awareness of the sustainability citizenship and its importance for the future of the Ocean and consequently for the future of the planet, given students the principal role of learning and acting.

## ACKNOWLEDGEMENTS

We want to thank all schools, teachers, students, families, universities, and communities that have been testing the resources and contributed with data to the *#EstudoEmCasa Apoia* project. In particular in this study, we want to thank students and teachers from *School cluster Frei Gonçalo de Azevedo*, in Cascais, *School cluster Ferreira de Castro* in Oliveira de Azeméis, and *School cluster Fernando Casimiro Pereira da Silva* in Rio Maior. We also want to thank all partners and to all who make this project possible.

## REFERENCES

- [1] Creswell, J. W. (2009). *Research Design: Qualitative, Quantitative, and Mixed Methods Approaches* (3rd ed.). Thousand Oaks, CA: Sage Publications. Retrieved from URL.
- [2] Greene, J. C. (2007). *Mixed Methods in Social Inquiry*. San Francisco: Jossey-Bass. Leonard B. Bliss. *Journal of Mixed Methods Research* 2008 2: 2, 190-192. Retrieved from URL.
- [3] Hargreaves, A. (1998). *Os professores em tempos de mudança: O trabalho e a cultura dos professores na idade pós-moderna*. Lisboa: McGraw Hill.
- [4] R. Redondo, M. Rodríguez, J. Escobar & A. Vilas, "Integrating micro-learning content in traditional e-learning platforms", *Multimed Tools Appl* 80, pp. 3121–3151 (2021). Retrieved from URL.
- [5] K. Leong, A. Sung, D. Au and C. Blanchard, "A review of the trend of microlearning" *Journal of Work-Applied Management*, Vol. 13, no. 1, 2021 pp. 88-102, 2021. Emerald Publishing Limited 2205-2062. Retrieved from URL.