

Designing and Implementing a Distance Education Plan: A Case Study at A School in Portugal in Pandemic Context

PART I OF THE RESEARCH

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Abstract.

Considering the epidemiological situation of the new coronavirus - COVID 19 in Portugal, the XXII Constitutional Government decided, in March 2020, to suspend all classroom teaching and non-teaching activities in all educational establishments in the national territory. Consequently, all Portuguese educational institutions had to adapt to the new educational reality, where technologies play a leading role in ensuring communication, interaction and collaboration between all stakeholders in the teaching-learning process. Naturally, this adaptation took time and was accompanied by several opinions and guidelines issued by the Ministry of Education and other responsible entities. In general, these guidelines aimed to ensure that all students continue to learn in a pandemic context, regardless of geographical and temporal barriers. One of the guidelines issued was the design, development and implementation of a Distance Learning Plan in each of the Portuguese schools. Thus, based on the case study methodology, we intend to demonstrate the process of designing and implementing a distance education plan in a school in Portugal. The plan was categorized into three main areas - technology, pedagogy, and content - and arise from the theoretical model Technological, Pedagogical and Content Knowledge (TPACK). This plan was developed based on the consultation of all educational agents in that school, but, in a special way, of the students and teachers who were the protagonists in the educational process. Participant observation, recorded in the researcher's diary, was also another instrument used that contributed to the design of the distance education plan. The results of the study suggest that the plan designed, despite the improvements that it naturally had to have during its implementation, was adequate for the realization of the process of teaching and learning at a distance in times of pandemic.

Keywords: Distance Education Plan, Pandemic Covid-19, Teaching-learning process, Technologies, TPACK.

1. Introduction

Due to the covid-19 pandemic, it was necessary to completely change the way of teaching, of transmitting knowledge and skills to students. In short, it was absolutely vital to change the entire teaching-learning process. In other words, it was necessary to transpose (or better convert) face-to-face teaching to online teaching! Yes, we reaffirm, face-to-face teaching has been transposed to online, without schools and teachers having had time to adequately prepare themselves not only to teach online but also to change their practices. There was no time to

train teachers, as almost nobody was prepared to teach online! There was no time to provide technical and pedagogical training! There was no time for adaptation periods or for major clarification sessions! There was only time to transpose face-to-face teaching online and thereby try to guarantee student learning regardless of geographical and temporal barriers. That was the only concern and priority - to guarantee the continuity of the teaching-learning process in the middle of a pandemic context. This study shows precisely how a Portuguese school - our home study - designed and implemented a Distance Education Plan (E@D). The design and conception of this plan was requested to all schools by the governmental educational entities of Portugal, because only in this way was it possible to guarantee that all schools would be aligned along the same lines and axes for the realization of online education. These axes reached schools through guidelines and opinions issued by the competent entities, especially through a Roadmap that included eight guiding principles for the implementation of distance learning (E@D) in schools (DGE, 2020). In general, these principles are the axes that maintain the uniformity of distance learning processes in all Portuguese educational institutions. So, with the development of this research, we tried to present globally the design of an E@D plan that was vital for the implementation of the teaching-learning process. In the design of the plan, all stakeholders of the school were heard (students, teachers, employees, management and guardians), as this was the only way to make a design that fulfilled the greatest number of educational needs.

Finally, it should be noted that the E@D plan was designed taking into account the main dimensions of the Technological, Pedagogical and Content Knowledge (TPACK) theoretical framework - *technology, pedagogy and content* - These dimensions, properly articulated, allow the effective use of technologies in an educational context and are therefore fundamental to the development of this research.

2. Technological, Pedagogical and Content Knowledge (TPACK)

The TPACK model was adopted in this study as a theoretical framework that allowed the development of the E@D Plan through its main dimensions of knowledge (TK, PK and CK). Technological Knowledge (TK) “involves the skills necessary to operate certain technologies. [...] The ability to learn and adapt to new technologies will still be important” (Mishra & Koehler, 2006, pp. 1027-1028). Pedagogical Knowledge (PK) requires the teacher to know and be able to teach certain content (Harris et al., 2009; Koehler & Mishra, 2009; Mazon, 2012; Silva, 2009). This knowledge “requires an understanding of the cognitive, social skills and theories of learning development and how they apply to students in the classroom” (Mishra & Koehler, 2006, pp. 1026-1027). Content Knowledge (CK) consists of “knowledge about the content that must be taught or learned” (Mishra & Koehler, 2006, p. 1026). These dimensions when interconnected give rise to TPACK, which is the set of knowledge necessary for the efficient use of technologies by teachers in an educational context. Teaching using technology requires an understanding of the relationships of mutual reinforcement between technology, pedagogy and content. Thus, “teachers must understand the complex way in which these three domains, and the contexts in which they are formed, coexist and influence each other” (Sampaio & Coutinho, 2013, p. 7). In general, the TPACK model “... offers options for analyzing a complex phenomenon, such as technological integration, in ways that are now amenable to analysis and development” (Koehler & Mishra, 2009, p. 67).

This knowledges (TK, PK and CK) was vital for the design and implementation of the E@D Plan but also for the monitoring and evaluation process that will be addressed in part II of this investigation.

3. Guidelines for the development of the distance education plan

3.1 Recommendations on distance learning

Following the closure of schools due to Covid-19 the UNESCO published 10 recommendations on distance learning (UNESCO, 2020):

- Analyze the response and choose the most appropriate technologies according to the electricity and communications services in the area, as well as the capacities of students and teachers;
- Ensure that the programs are inclusive in order to guarantee access for low-income or disabled students. Installing school computers in the students' homes is one of the possibilities;
- Ensure the security of online communications and the privacy of student data;
- Give priority to psychosocial challenges, before educational problems, creating communities that ensure regular human interactions and facilitating social care measures;
- Organize discussions with partners to understand the duration of the suspension of classes and to decide whether the program should focus on new knowledge or consolidation of old curriculum;
- Support parents and teachers in the use of digital technologies, organizing short-term training and guidance for students and teachers. Help teachers with basic working conditions, such as an internet network for videoconference classes;
- Bring together different approaches and limit the use of a large number of applications/technologies;
- Create rules and assess student learning through tests and exercises that allow you to assess learning closely. Facilitating the sending of the assessment to the students, avoiding overloading the parents is also another recommendation;
- Set the duration of the units based on the students' ability. For this, it is essential that each unit should not exceed 20 minutes for primary education and 40 minutes for secondary education;
- Create communities of teachers, parents and school principals and increase the connection to combat the feeling of loneliness and despair, facilitating the exchange of experiences and discussion of strategies to face difficulties (UNESCO, 2020).

These recommendations were important so that educational institutions could clearly define their strategic lines and distance learning models.

3.2 Principles for the implementation of distance learning in the schools

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Based on the previously identified recommendations on distance learning, the competent Portuguese entities prepared a Roadmap that included eight guiding principles for the implementation of distance learning (E@D) in schools.

The first principle - *Mobilizing for change* - contemplates five fundamental dimensions: The need to involve the educational community in the search for the most appropriate E@D Plan for the School and the definition of an E@D Plan adequate to the available resources and the public-target. By the way, an E@D Plan may contain four stages: a) Definition of management and leadership strategies; b) Communication strategy and circuit; c) Distance learning model; d) Monitoring and evaluation plan (DGE, 2020). In addition to these two dimensions, three more stand out, namely the following: The mobilization of partners available to collaborate, the definition of a role for intermediate leaders in the definition and implementation of pedagogical guidelines and, finally, the constitution of a team of support to answer/organize emerging issues.

The second principle - *Communicating in a network* - is fundamental, since it allows the establishment of an effective communication circuit, addressed to all the stakeholders of the school community. Naturally, all communication actions and activities should: a) be guided by a central message; b) adapt to the recipients; c) follow a strategy; d) be transmitted at times and through the most appropriate means/channels (DGE, 2020).

The third principle - *Deciding the E@D model* - contemplates three dimensions: Deciding which weekly timetable to be fulfilled by the students (fixed or flexible, including the necessary break times); Organize the pedagogical teams/class councils to design the students' work plan; and to consider the realization of ways of working at a distance, with careful consideration to synchronous sessions (DGE, 2020).

The fourth principle - *Collaborate and articulate* - contemplates only one dimension that has to do with the promotion of mutual help among teachers, as currently “sharing and collaboration among peers is particularly important...at a time of experimenting with new ways of teaching” (DGE, 2020, p.5).

The fifth principle - *Teaching Methodologies* - consists of three dimensions: The teaching methodologies developed at E@D must be appealing and mobilize students for action; The importance of developing teaching methodologies that promote an active role for students in the search for new learning; and to foster the development of the competence areas of the students' profile (DGE, 2020).

The sixth principle - *Select the technological means of E@D* - consists of four dimensions that are identified below: Find the technological means that help distance learning without flooding students with multiple communication solutions; Use the technological means previously used by teachers and students; Provide technical and pedagogical support to teachers, with a view to using technological means; Train teachers to use the selected technological means (DGE, 2020).

The seventh principle - *Caring for the school community* - is constituted, like the previous one, by four dimensions, namely: To develop activities that promote the feeling of belonging to the class; Think about the development of students' emotional well-being and the promotion

of confidence towards the school, while learning from home; Prevent situations of isolation of students; Encourage students to help each other (DGE, 2020).

Finally, the eighth principle - *Follow and monitor* - has only one dimension that has to do with the need to provide for forms of monitoring. It was therefore necessary to create a team responsible for monitoring and regulating the E@D Plan (consisting of 3 people), with regular consultation with all stakeholders in the teaching-learning process. In addition to this aspect, there was a need to define quality and quantity indicators to simplify the monitoring process. Thus, as quality indicators, the following were chosen: Degree of satisfaction of teachers, students and parents / EE; The quality of the feedback given to students, aiming at monitoring learning. As indicators of quantity, the following set was chosen: Rate of completion of tasks proposed by teachers; Number of tasks sent by teachers, depending on the work plan developed; Availability of technological means of E@D; Support for the development of digital skills for teachers and students; Development of support mechanisms, aimed at students without a computer and internet connection at home. It is important to mention that these indicators - *quantity and quality* - were in accordance with the general guidelines foreseen in the distance learning script. All of these indicators, both in terms of quantity and quality, were in line with the guidelines set out in the roadmap. It is important to mention that the monitoring and evaluation process of the E@D Plan will be properly addressed in the second part of this research called *Monitoring and evaluating a distance education plan: a case study at a school in Portugal in pandemic context*. Naturally, as evidenced in the respective document, “the constitutive process and the respective implementation of an E@D Plan provide for different stages of preparation, internal debate, reflection, survey and definition of technological means, among many other factors, assuming as a dynamic and constantly improving process” (DGE, 2020, p.1). It is important to reiterate that, as previously mentioned, the E@D Plan was conceived taking into consideration the reflection and the debate between all the actors of the school (students, parents, employees, teachers, pedagogical coordination and direction), always attending “to the need to find the most appropriate and potent responses to the educational success of students” (DGE, 2020, p.1).

4. Methodology

Based on the case study methodology, we intend to demonstrate the process of designing and implementing a distance education plan at a school in Portugal. The plan was categorized into three main dimensions - *pedagogy, technology and content dimension* - and was developed based on listening, through a questionnaire survey, to all the protagonists in the school's educational process (the school management, pedagogical coordination, e-learning coordination and technical support, coordinators, class directors, teachers, multidisciplinary inclusive education team, administration services school, psychology office and students). Participant observation, recorded in the researcher's diary, was also another of the instruments used that contributed to the design of the distance education plan.

It is important to note that the option for the case study methodology had to do with the fact of explaining a situation and describing an object or phenomenon: “It is an investigation that is assumed to be particularistic, that is, that deliberately looks at a specific situation that is supposed to be unique or special” (Ponte, 2006, p.2), in this specific case, the process of

designing and implementing the E@D Plan in the school. In general, it can be said that "a case study is an empirical investigation that investigates a contemporary phenomenon within its real life context, especially when the boundaries between the phenomenon and the context are not clearly defined (Yin, 2005, p.32). Case studies are used when working with contextual conditions, believing that these conditions may be relevant in the investigation (Yin, 2005), in this case, the e-learning environment, with the objective of improving the design of the E@D Plan in the implementation plan phase and adapting to new requirements and needs.

Regarding the students, the diagnosis of the situation of the students' computer resources was carried out by the class directors, as well as by completing a questionnaire survey in which a total of 113 responses were obtained, 85,82% of which correspond to the female gender and 14,33% to the male gender. Of the respondents, 92,00% had access to the technological equipment necessary to participate in e-learning classes and only 8,00% did not have the necessary conditions to participate in e-learning classes. Based on these assumptions, the school, together with its partners and the educational community, made efforts to ensure, at the start of the third term, the necessary conditions for students to participate in classes without technological resources.

The differentiation between qualitative and quantitative methods is a matter of emphasis, since in reality it corresponds to a fusion of both (Stake, 1999). Thus, although the case study has traditionally been within the scope of qualitative research, it is recognized that it is advantageous for research to use data of both types (Flick, 2004; Yin, 1993, 2005). In this research, quantitative and qualitative research techniques are used, with the objective of looking at both as complementary and not as opposites, because while the quantitative method aims, above all, to "explain and predict a phenomenon by measuring the variables and through the analysis of numerical data, qualitative research aims at a broader understanding of phenomena" (Fortin et al., 2009, p.27). In this sense, this investigation is of both natures - *quantitative and qualitative*.

All data from participant observation (investigator's diary) and questionnaire surveys submitted to students and teachers, were properly analyzed in *Microsoft Excel* through a careful and rigorous analysis. On the one hand, in quantitative analysis, we seek to understand the technological knowledge of students and teachers in order to identify their digital skills for distance learning. On the other hand, through content analysis, we try to understand in more detail the position of the actors (students and teachers) in relation to the most appropriate pedagogy for the implementation of the distance teaching-learning process, but also about the type of content (videos, texts, documents, images, tables, graphs, sounds, ...) that were of most interest to both parties.

5. Distance education plan

The distance education plan consists of eight fundamental parts, namely: Part I - *Contextualization* - where the general and specific objectives of the E@D Plan are identified, its dimensions, the recipients and the overall structure of the respective plan; Part II - *Distance Learning Model* - the Management and Leadership Strategy, the information circuit, the work teams (E-Learning Team, Extended e-Learning Team, the Multidisciplinary Support Team for

Inclusive Education and the Quality Dynamizing Team). In addition to these, the following points present the three components of the E@D Plan (Technological, Pedagogical and Content); Part III - *Monitoring and evaluation plan* - the e-learning monitoring process is addressed, as well as the evaluation process; Part IV - *Data privacy* - data privacy must also be present in e-learning education, which is why we are concerned with addressing the theme; Part V - *Expected results* - the expected results are identified with the implementation of the E@D Plan, which are categorized into three dimensions: technological, pedagogical and content. It should be noted that these results will only be released in a survey that will be published later; Part VI - *Missing Cases* - All missing cases that are not clearly identified and clarified in the document, must be reported directly to the e-learning Coordinator; Part VII - *References* - this section presents all the references that were essential for the realization of the E@D Plan. These references are generally government documents and some guidelines from the General Directorate of Education, the General Directorate of School Establishments, the National Agency for Qualification and Vocational Education and the National Association of Professional Schools published up to the date of the completion of the E@D Plan; Part VIII - *Attachments* - All the attachments that support the E@D Plan are presented, from the school calendar 2019-2020, the school timetable per class for the school period, the calendar of pedagogical meetings and class councils, among others. others.

5.1. Technological dimension

For the full completion of the third school term, in addition to the School Management Platform that managed the entire administrative-pedagogical process, four technological tools were adopted: *Microsoft Teams*, *Outlook* (institutional email) and *OneDrive*, which are *Office365* tools. For more direct contact between teachers and school bodies, *WhatsApp* was adopted.

- *Microsoft Teams* is a synchronous tool that allowed the creation of virtual rooms for real-time communication, through videoconferencing, but also asynchronous to the extent that we can use chat. This tool was used to teach classes and to hold meetings of the most diverse classes. The training of teachers and students at *Microsoft Teams* was provided by the e-Learning Coordinator and took place in synchronous sessions whenever deemed necessary. Technical support on this platform was also provided by the e-learning Coordinator.
- Another tool adopted was the institutional email from *Microsoft Outlook*. This tool was used as a formal means of internal communication among the entire educational community - management, coordinators, class directors, teachers, school administration services, psychology office and students. The institutional e-mail was used to clarify doubts to students, to send/receive documents or information among the other services and bodies of the school, to provide/receive technical support in other technological tools. In addition to these objectives, it is important to note that institutional email enabled collaborative work between peers through access to all *Office 365* tools.
- *OneDrive* (cloud storage) was also another tool used to store files. *OneDrive* allowed to upload (upload) documents, statements of activities, works and projects and presentations, but also to transfer (download) all the documents that the teachers placed

in the folders. *OneDrive* was organized by course, subjects and modules and each teacher only had access to its contents, having no privilege to access contents from other subjects.

- Finally, *WhatsApp* was also used as a synchronous tool as it allowed communication in time. This tool also made it possible to chat by text or share sound clips, but it also allowed “quick answers” among colleagues, namely, to clarify occasional doubts, feedback between peers and technical support.
- In addition to this tools, both teachers and students used other tools available in *Office 365*. Examples of these tools were *Word, Excel, PowerPoint, OneNote, ClassNotebook, Sway, Forms* and many others.

It should be noted that all the tools previously identified were installed by all members of the educational community on their smartphones. In this way, it was possible for everyone to have access to all e-learning tools without needing a computer.

5.1.1 Communication with parents (guardians)

The contact with the students' guardians was fundamental, especially in the conjecture in which we live, as the meetings were vital for the functioning of the teaching-learning process. Naturally, these meetings, as in the face-to-face teaching modality, took place whenever deemed necessary, regardless of difficulties, constraints and eventual communication difficulties.

In order to ensure communication with the Students' Parents, the following procedure was determined:

- For those in charge of Students' Education who had more solid digital skills, it was recommended that the communication be carried out with support for *Microsoft Teams*.
- For those in charge of Students' Education who have digital skills at an intermediate level (knowledge from the user's perspective), the use of *WhatsApp* was recommended, through direct contact with their personal mobile phone number.
- For those in charge of students' education who had limitations in terms of digital skills or limitations in accessing the internet or even who did not have access to the equipment essential for synchronous communication (hardware and software), it was suggested to adopt the mobile phone, namely, direct telephone calls between the parties.

Although, priority was given to the synchronization of communication with the Students' Parents, in exceptional cases, the Class Directors were authorized to use other asynchronous means of communication, namely, the following: Institutional e-mail or mobile phone messages.

5.1.2 Institutional meetings (and others)

The institutional meetings were not compromised, especially due to the importance they had for the continuation of the school's work and, consequently, for its development as an educational institution. In this sense, these meetings, regardless of their character, always took place synchronously, using a tool selected by both parties (the school and the entity with which it met). Notwithstanding that, in exceptional cases, duly identified by the School Director, asynchronous communication has been privileged. In this case, other tools more appropriate to

the accomplishment of the referred meeting were authorized, which were determined in due course.

Finally, as in classroom teaching, data privacy had to be present in e-learning teaching. Thus, teachers took into account two aspects: All the documents filled out by students related to data protection remained in force in e-learning teaching; The teacher, due to the need to motivate students for his synchronous classes, chose to connect his webcam in *Microsoft Teams*, at least while teaching with support in the expository, active and demonstrative methods. Any omissions on this matter were directly reported to the School's Data Protection Officer.

5.2. Pedagogic dimension

In the pedagogical dimension, the way in which the online teaching-learning process took place is presented.

- The pedagogical team's/class councils designed a weekly work plan for each class, under the guidance of the class director and course coordinator.
- This plan was designed for all students and as such took into account the principles that already exist in the design of universal, selective and additional measures that had already been adopted in the scope of inclusive education.
- Distance learning methodologies have always been diverse, framing and enabling the presentation of examples and have fostered self-reflection and autonomous work.
- In the articulated balance between the different subjects, the weekly teaching hours of the teachers were organized. The schedules provided a balance between work performed in synchronous and asynchronous formats.
- The weekly teaching hours of each discipline had a very short period (between 5 to 15 minutes) of synchronous work.
- The asynchronous work of the classes was dedicated to carrying out works and tasks that promoted the student's autonomous work and the development, in a team / group, in a project format that had an interdisciplinary dimension, favoring the development of skills of the student's exit profile. student of the courses they attended.
- The teacher remained online via *Microsoft Teams*, with the students, throughout the weekly academic period of the discipline he teaches.
- Teachers regarding students who have difficulties in the teaching-learning process proceeded to build learning resources adapted to the concrete situation of each student.
- The *Virtual Learning Support Center* was also created with the respective timetable in order to guarantee access for students who needed this resource.
- In e-learning classes it was essential to ensure an articulated balance between the different subjects, even as a way of reducing the workload for students.
- The teachers sought together with their peers to design statements of work together, clearly determining the objectives of each of the subjects and ensuring that the evaluation is carried out only on the basis of the objectives of each subject.
- Teachers also had the opportunity to present tasks focused on problem issues, case studies, projects, among others.

Naturally, the mobilization of students to carry out interdisciplinary projects led to the need to articulate the learning of various disciplines and training components, so it was essential to enable students to assume this responsibility and autonomy.

In terms of internship/training in the context of work, the following was verified:

- During the Distance Learning period, the internship periods will aim to keep students committed and aligned with the internship projects and the respective reports.
- The school had two plans prepared: Plan A - the internships were carried out in person at the institutions at the end of the 3rd period; Plan B - development of a pedagogical work, in a simulated practice format, that contributes to the achievement of the objectives defined in the respective training. The work was developed in a synchronous and asynchronous manner according to the weekly academic times of the internship, having a very short period (5 to 15 minutes) of synchronous work and, later, asynchronous dedicated to the realization of the internship project, favoring the development of skills the profile of the respective courses.
- The internship project was carried out, using the *Microsoft Teams* synchronous tool, in a virtual room.
- The internship reports were deposited by students on *OneDrive*.

With regard to the final work of the courses (Professional Courses and Education and Training Courses), the following procedure was verified:

- Presentation and defense: The presentation and defense of the final course work (Professional Aptitude Test and Final Assessment Test) took place using the *Microsoft Teams* synchronous tool, with the students and the jury present in the respective virtual rooms.
- Evidence of the work developed: All the evidence (report, products, works, attachments and other content that supported the final course work) were made available on *OneDrive* so that students, through sharing their screen, could present it to the jury, whenever this consider it necessary.
- Meeting and deliberations of the jury table: As in the presentation and defense, the meeting of the jury table for deliberation of the results of the final works, took place by *Microsoft Teams*.

It is also important to note that the replacement classes were held asynchronously using the *Microsoft Teams* chat tool, for which the respective virtual rooms were created per class. The replacement plans were always inserted by the teacher in the *Virtual Classroom Replacement Room* where all students and teachers had access.

The Psychology Office was also instrumental in helping students who needed it, especially due to the conjecture in which we live. In this sense, keeping this Office in full working order was a central issue. The Online Psychology Office worked as follows:

- Consultations were scheduled by the Psychologist in conjunction with the student's availability;
- The consultations took place at *Microsoft Teams*, in a closed session in which only the two (psychologist and student) will have access to this virtual room;
- The archive of the notes taken from the session is the responsibility of the Psychologist.

With regard to the internal meetings of teachers (Course Coordinators, Class Councils, Pedagogical Council and General Meeting of Teachers), they always took place via *Microsoft Teams*, through their own virtual rooms created for this purpose. Whenever possible, efforts were made to ensure that all teachers digitally signed the attendance sheet for the respective meetings. In exceptional cases, either the attendance sheet or other documents, for example, the final guidelines could be signed via post.

5.3. Content dimension

In the content dimension, it is presented how the content should be produced and made available online.

Regarding the production and availability of content, the following is verified:

- All the multimedia content produced by the teachers (text, videos, images, graphics, tables, ...) had to be clear and succinct so that the students could understand the subjects more easily.
- All proposals for activities, exercises and projects, as well as books, digital notebooks and *PowerPoint* presentations, had to be submitted on *OneDrive* in *PDF* format for students to have access.

In terms of accessibility and security, the following was determined:

- Students: they had access to view the contents and materials of the classes inserted by the teachers, download the enunciated works and to deposit/upload the resolution of activities, worksheets, exercises and others that the teacher deemed relevant to the monitoring process and evaluation;
- Teachers: had access to view the contents and materials of their classes, create / edit folders within their discipline/module, deposit/upload the contents of their discipline, download the works deposited by the student;
- e-learning team: they had access to view the folders of all subjects, only with permission to download files.

Regarding the advertising of teaching activities in e-learning, the images (prints screens) and videos produced were fundamental as evidence that the classes were taught and as content for the school's advertising to attract students for the next school year. Based on this assumption, it was essential that all teachers take into account the following items:

- All Class Directors, with the collaboration of the teachers, had to collect, at least once a week, three images of the classes in their class.
- The images had to be sent to the e-mail addresses of the members of the e-learning team for later publication on the web.
- The images were always accompanied with a short text that contained the following content: Designation of the discipline; Class designation; Topic addressed; Teacher involved in the activity/class; Activity developed.
- Before capturing the images, the Class Director or the responsible Teacher always took into account whether the students had their rights guaranteed / gave permission for publication on the web.

6. Conclusions

The results of this research suggest that the plan designed was adequate for the realization of the process of teaching and learning at a distance in times of pandemic. However, this process - *design and implementation of the E@D Plan* - was not a simple or easy challenge; nor to the school due to the need to reorganize its way of functioning; nor for students due to the difficulty of learning at a distance; nor for teachers as they, not only in this particular school, but across the country were not prepared to teach online, especially due to the lack of training in this field in the professional development of teachers. To these difficulties were added others in the scope of the *technological dimension* that have to do with the lack of digital skills in the educational community; on the one hand, teachers whose technological knowledge was limited; on the other hand, the students, due to the lack of access to equipment and internet, which, in an initial phase, hindered the teaching-learning process. Naturally, over time, students and teachers adjusted to the acquisition and improvement of their digital skills through the experience and use of the school's equipment and software, the clarification of doubts between peers and the technical support provided by the e-learning.

In the design of the pedagogical dimension, there were some obstacles related to the need for teachers to adapt their pedagogical practices (teaching methods) to online teaching. This issue is well understood due to the lack of training for teachers to teach online. In addition to this issue, another challenge was the design of an e-learning solution that would motivate students in online sessions, especially in synchronous sessions. It was not a simple task because it is easy for the student to lose motivation due to lack of concentration (because he is at home in a monotonous environment). Also noteworthy is the difficulty in organizing the design of the methodologies for evaluating the discipline and the student. The issues related to evaluation are still the subject of much discussion in the scientific community due to their surrounding complexity.

In the design of the content dimension, there was a difficulty in understanding how physical content (on paper) would be converted to digital format. This difficulty was due to the fact that both stakeholders - students and teachers - are still very used to the use of paper in the teaching-learning process. Obviously, as time went by, everyone had to get used to it, except for practical classes such as, for example, plastic expressions, physical education, among others. Another of the difficulties in implementing this dimension was the need to motivate teachers to create quizzes, games and group activities that would allow students to better understand and consolidate the content taught by teachers. This aspect is related to the lack of digital skills of teachers in this area, the lack of training and the lack of time to search for new learning solutions.

Finally, it should be noted that many of the problems were overcome day by day with the collaboration of all stakeholders, with the sharing of ideas, training actions, reflections, debates, peer support, weekly evaluation meetings, with the technical and learning support team and with everyone's contribution. It is important to mention that many of the results obtained from these shares served to update the E@D Plan in order to be closer to the educational reality and its stakeholders. It was undoubtedly a process in constant change, dynamic, progressive and especially open to all. Only in this way was this school able to overcome its objectives and guarantee the full continuity of the teaching-learning process.

Note: It should be noted that the second part of this research, called Monitoring and evaluating a distance education plan: a case study at a school in Portugal in pandemic context will be published shortly.

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