Impact Of Digital Technologies On Pedagogical Practice In Primary Education

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Abstract
Rare are the teachers who have never used information and communication technologies (ICT) in an educational context. We intend to know the impact of the inclusion of ICT in the learning process by listening to primary teachers in service and students in an internship situation, the latter in the scope of initial teacher training. With regard to in-service teachers, a case study of a quantitative and qualitative nature was chosen in the Porto region in 2012. The analysis of a question of a questionnaire survey of about 1300 teachers, teaching in public and private institutions in the Porto region, is presented. Of these, 188 referred to perform good practices with digital technologies being eleven selected for interview, for which the analysis of the good practices referred to is presented. With regard to trainee students, in the scope of initial teacher training, 15 reflective narratives selected from two professional masters were analyzed. The analysis of the questionnaire question allowed to verify the impact of ICT in educational practices and the triangulation of data allowed on the one hand to clarify the conception of good practices and to find the principles of the same ones, on the other hand to verify the evolution of educational practices in terms of the selected resources and methodologies. We intend to contribute to a reflection on the impact of ICT in primary education and on the responses that training institutions can give on this issue.
Key Words: *Good practices with ICT, Impact of ICT in primary education, Methodological renewal.*

Introduction

Pink (2006) highlights the emergence of an era of accessible opportunities for those who develop digital skills and a new intelligence paradigm capable of adapting to the new challenges of the digital era. Castells (2000) also highlights the social movements of the network society, fostered by emerging technologies, which facilitate interactions and highlights the value of education to take advantage of these opportunities for access and development. In fact, the increasing digitalization in the world, in the most varied areas, imposes, in the field of education, the need to rethink teacher education for the implementation of practices that form the exercise of the current citizen, namely to enable students with skills to help them challenges of contemporary society, as reinforced by the OECD framework (2018).Thus, the context of education requires renewal not only at the organizational and political levels, but above all in the context of educational practices, at didactic and pedagogical level, which means methodological renewal, inclusion of new didactic resources, namely the digital ones that stimulate and reinforce the field of digital literacy important for the full exercise of citizenship

According to Portugal INCoDe.2030 (2017) and OECD (2018), the preparation of students to be responsible and conscientious in the present and in the future requires the ability to coexist with digital technologies and comprehension by the early acquisition of knowledge at the user level often intervening, which means developing logical reasoning skills, collaborative work and design, and code development skills such as programming language knowledge. It requires the ability to think critically and creatively by transforming reality through reflection, anticipation and action. It requires empathy, curiosity, resilience, adaptability, responsibility, ability to act, mobilizing knowledge with rigor and coherence, solving problems with effectiveness, trust, respect for self and others.

In this scenario, renewal presupposes the design of educational practices adjusted to the new social and technological reality. It should be noted that the lack of preparation of the teachers makes them inflexible and reproductive of more traditional practices, not being able to create a good learning environment, so it is important to know the contours of their own knowledge and their mobilization in the course of their practices, as Gomes (2018) states. The author reinforces that teacher education should not only focus on knowledge of curricular content, but also focus on didactic knowledge to guide students to learn to learn. In fact, in the past, students were

influenced by the teacher's status and knowledge, but today they devalue the school as a source of access to knowledge by questioning the teacher's competence or decisions and valuing affective and relational aspects (Jesus, 2008). This change of focus may be due to the easy access of the information, on the one hand, and to the type of methodology adopted by the teacher, on the other hand, that may not correspond to the interests of the students. Teacher training and motivation for success and professional achievement is important in the pedagogical relationship. According to the same author (idem), it is important that the teacher has a global perspective on the most appropriate working hypotheses for a given educational moment, thus reinforcing the importance of a teacher's view on the trends of education in the present and in the social future, which presupposes the need for teachers to develop their skills in the context of initial teacher training and lifelong learning, not only in the scientific dimension, but also in adaptability to the new era, so that they can respond with quality to the need and expectations of their students. The active and participatory methodologies that promote the student and his / her proximity to the teacher and the surrounding reality may motivate the students and develop fundamental basic skills in the answers to the current challenges.

A study *Future Vision +15*, developed by the Telefónica Vivo Foundation, shows the relevance of the consolidation of social and emotional competences in school curricula and in the educational processes that are increasingly close to the communities. It also highlights the inclusion of technology with special emphasis on the programming language in the learning process, from early childhood, and as a value in the personalization of education. This vision is part of a process of innovation that sees the concrete person, who values the humanist profile by placing learning as a center of educational process and inclusion as essential in the attention to differences. These same aspects are mentioned in the student profile for the 20th century XXI (Oliveira-Martins, 2017) and contribute to achieve a new model of development that, besides the utilitarian and economist view, includes the integration of multiple dimensions of human existence to build a sustainable future and a dignified life (UNESCO, 2016). This opportunity to reconsider the articulation between education and social development re-contextualizes education to ensure sustainable development in an interdependent world.

In fact, bringing schools closer to the community increases the challenges in preparing students for the multiple demands of contemporary society, so there is a need to combine knowledge, skills, attitudes and values that enable people to act in diverse contexts by making free and informed decisions, in order to participate actively and responsibly in society (Oliveira-Martins, 2017). In response to this complexity, we live a change from a curricular point of view, since enumerative encyclopedic accumulation is replaced by the deepening of the complexity of the essential knowledge, promoting qualitative gains in solidity and deep use of knowledge, emphasizing the need to implement and organize the teaching and learning within the framework of curricular, interdisciplinary and transdisciplinary articulation (OCDE, 2018; Roldão, Peralta & Martins, 2017).

Rethinking education in a changing, plural and interconnected world and for the common good imposes social inclusion and transformation of learning processes, namely the process of acquisition, validation and use of knowledge, as well as fundamental issues of knowledge creation and control (UNESCO, 2018). It also requires the inclusion of resources in supports other than conventional ones and educational practices that respond to potentialities, expectations and needs within a common and plural educational project (Decree-Law No. 54/2018, of 6 July). This requires a conscious reflection of the teacher about what children learn, how they learn, where and how they mobilize what they learn, which implies creativity and ability to select resources, ways of teaching to learn to learn, evaluation processes and dissemination of knowledge. It changes the role of the actors in education and teachers assume great challenges and responsibilities in the process of promoting learning opportunity as a collective individual and social effort.

In this article, we intend to know the impact of the inclusion of ICT in the educational practices with ICT by primary teachers in service and in the stage of training. Considering different temporal moments, we can understand the evolution of educational practices in recent times and realize the way in which higher education responds to current challenges.

Methodology

The opinion of primary school teachers, teaching in public and private schools in 2010 was recorded, as well as the opinion of trainee students in initial teacher education, who were carrying out the supervised educational practice in primary education, in the 2016/2017 and 2017/2018.

Thus, in the case of in-service teachers, a quantitative and qualitative study was carried out by questionnaire, having collected about 1300 valid answers, corresponding to 41% of the 1st Cycle teachers in the region.

Of these teachers, 188 reported having performed good practices, and 11 teachers were selected because they presented practices that were more significant in terms of methodologies, articulation of knowledge and ICT resources used.

- In our sample, 89% are female and 11% male; 14% are younger (22-28 years of age) and 25% are older (48 to 65 years of age); with ages ranging from 29 to 47 years are 61%. Regarding education, 78% are graduates, 10% are bachelors and 12% have postgraduate, master's or doctoral degrees. In addition, 87% teach in a public institutions and 14% in private institutions. The teachers interviewed fit into a teaching profile with ages between 29 and 47 years of age, 5 and 33 years of professional service.

With respect to the trainee teachers of two professional master's degrees, 15 reflective narratives carried out by them during these years, were analyzed. The sample involves young female students who practice in public schools.

For the quantitative analysis the SPSS program was used and for the interviews a content analysis was done.

Findings

(a) Impact of information and communication technologies, according to in-service teachers

We wanted to understand the opinions of teachers in service regarding the impact of information and communication technologies on some educational practices, namely: information research by students; discussion of ideas in forums; sharing of digital files; preparation of text works; preparation of a self-learning diary; presentation with multimedia; conducting research projects and problem solving; interactive exercises.

It should be noted, however, that it has been found that the evaluation of some variables related to the effect of ICT depends on the age of teachers, so that older people are more likely to consider that ICTs deconcentrate pupils and that it occupies them quite a lot of time, and that while motivating students do not notice enough differences in learning. Perhaps this result mirrors the difficulty that these teachers have in the correct integration of digital resources, since in themselves they do not guarantee success in education, especially if a traditional methodology is used. There is thus a need for ICT training, but also time to deconstruct internalized models and renew methodological strategies. On the other hand, young people are likely to recognize that ICT enables students to engage in learning and improve school outcomes. This result shows that initial teacher training has responded to the demand for ICT inclusion by providing future teachers with ICT training. It was also found that the probability of asserting that all students are involved in learning is higher in teachers who teach in private institutions and that the probability of claiming that ICT takes up a lot of time is higher in teachers who teach in public institutions. It should be noted that teachers in private institutions are younger and in public are older.
The analysis of the evaluation of the effect of ICT on the activities carried out by the students reveals that there are independent variables and others that establish a significant relation of dependence. These last variables are presented in the following tables (1, 2, 3 4, 5, 6.7 and 8), that evaluate the effect of ICT in different activities (Results according to the Chi-Square Test with 95% confidence):

Table 1 - Evaluation of the effect of ICT in information research

Search Information		Yes %	No %	Total %	p_value
Allows all students to be involved in learning	Anything	11,5	6,5	7,3	0,044
	Little	7,6	13,3	12,3	
	Enough	59,9	61,3	61,1	
	Much	21,0	18,9	19,2	
	Total	100,0	100,0	100,0	

Table 2 - Evaluation of the effect of ICT in debating ideas in Forums

Discuss ideas in Forums		Yes %	No %	Total %	p_value
Allows all students to be involved in learning	Anything	0,0	7,5	7,3	0,015
	Little	17,6	12,2	12,3	
	Enough	35,3	61,6	61,1	
	Much	47,1	18,7	19,2	
	Total	100,0	100,0	100,0	

Table 3 - Assessing the effect of ICT on file sharing

Share digital files		Yes %	No %	Total %	p_value
Improves school results	Anything	5,0	4,1	4,2	0,037
	Little	25,0	23,9	23,9	
	Enough	47,5	62,8	62,1	
	Much	22,5	9,2	9,8	
	Total	100,0	100,0	100,0	
It takes a lot of time	Anything	11,4	22,3	21,9	0,022
	Little	37,1	38,9	38,8	
	Enough	34,3	33,3	33,4	
	Much	17.1	5,4	5,9	
	Total	100,0	100,0	100,0	

Table 4 - Evaluation of the effect of ICTs on writing ICT text

Table 5 - Evaluation of the effect of ICT in the development of a self-learning diary

Elaborate text works with ICT		Yes %	No %	Total %	p_value
Allows all students to be involved in learning	Anything	6,7	10,3	7,3	0,006
	Little	10,9	18,9	12,3	
	Enough	63,0	52,6	61,1	
	Much	19,5	18,3	19,2	
	Total	100,0	100,0	100,0	
Allows learning focused on understanding and participation	Anything	3,6	8,2	4,5	0,038
	Little	15,0	17,5	15,5	
	Enough	64,2	56,1	62,7	
	Much	17,2	18,1	17,3	
	Total	100,0	100,0	100,0	
Encourages collaborative work	Anything	5,2	9,9	6,0	0,000
	Little	15,3	26,2	17,3	
	Enough	63,4	47,7	60,5	
	Much	16,1	16,3	16,1	
	Total	100,0	100,0	100,0	

Elaborate a self-learning diary		Yes %	No %	Total %	p_value *
Improves school results	Anything	0,0	4,4	4,2	0,010
	Little	23,8	23,9	23,9	
	Enough	52,4	62,6	62,1	
	Much	23,8	9,1	9,8	
	Total	100,0	100,0	100,0	

Table 6 - Evaluation of the effect of ICT in conducting presentation with multimedia

Perform presentation with multimedia		Yes %	No %	Total %	p_value
Allows all students to be involved in learning	Anything	5,0	9,2	7,3	0,000
	Little	9,2	14,8	12,3	
	Enough	62,6	59,8	61,1	
	Much	23,2	16,1	19,2	
	Total	100,0	100,0	100,0	
Distracts students	Anything	59,7	60,5	60,1	0,005
	Little	37,9	32,1	34,8	
	Enough	1,7	5,9	3,9	
	Much	0,7	1,5	1,2	
	Total	100,0	100,0	100,0	
Improves school results	Anything	2,9	5,3	4,2	0,016
	Little	20,2	27,0	23,9	
	Enough	66,7	58,4	62,1	
	Much	10,2	9,4	9,8	
	Total	100,0	100,0	100,0	
Motivates students but does not notice difference in learning	Anything	32,8	24,3	28,2	0,011
	Little	42,3	41,6	41,9	
	Enough	20,4	27,7	24,3	
	Much	4,5	6,4	5,5	
	Total	100,0	100,0	100,0	

Table 7 - Evaluation of the effect of ICT in developing research projects and problem solving

Develop research projects and problem solving		Yes %	No %	Total %	p_value
Allows all students to be involved in learning	Anything	0,6	8,6	7,3	0,000
	Little	7,8	13,2	12,3	
	Enough	62,3	60,8	61,1	
	Much	29,2	17,3	19,2	
	Total	100,0	100,0	100,0	
Improves school results	Anything	0,7	4,8	4,2	0,000
	Little	17,2	25,2	23,9	
	Enough	64,8	61,6	62,1	
	Much	17,2	8,4	9,8	
	Total	100,0	100,0	100,0	
Allows for more learning focused on understanding and participation	Anything	1,3	5,1	4,5	0,006
	Little	10,7	16,4	15,5	
	Enough	63,1	62,6	62,7	
	Much	24,8	15,9	17,3	
	Total	100,0	100,0	100,0	
Encourages collaborative work	Anything	3,3	6,6	6,0	0,003
	Little	11,8	18,4	17,3	
	Enough	60,5	60,1	60,6	
	Much	24,8	14,4	16,1	
	Total	100,0	100,0	100,0	

Table 8 - Evaluation of the effect of ICT in solving interactive exercises

Solve interactive exercises		Yes %	No %	Total %	p_value
Allows all students to be involved in learning	Anything	4,5	9,3	7,3	0,000
	Little	9,8	14,2	12,3	
	Enough	60,4	61,6	61,1	
	Much	25,3	14,9	19,2	
	Total	100,0	100,0	100,0	
Distracting students	Anything	66,1	55,5	60,1	0,002
	Little	30,6	38,0	34,8	
	Enough	1,9	5,5	3,9	
	Much	1,3	1,0	1,2	
	Total	100,0	100,0	100,0	
Improves school results	Anything	2,0	5,8	4,2	0,000

Solve interactive exercises		Yes %	No %	Total %	p_value
	Little	17,5	28,7	23,9	
	Enough	67,8	57,9	62,1	
	Much	12,7	7,6	9,8	
	Total	100,0	100,0	100,0	
Allows for more learning focused on understanding and participation	Anything	1,3	6,8	4,5	0,000
	Little	12,8	17,4	15,5	
	Enough	66,2	60,1	62,7	
	Much	19,6	15,7	17,3	
	Total	100,0	100,0	100,0	
Encourages collaborative work	Anything	2,8	8,3	6,0	0,000
	Little	16,3	18,0	17,3	
	Enough	61,7	59,7	60,5	
	Much	19,2	14,0	16,1	
	Total	100,0	100,0	100,0	
Motivates students but does not notice difference in learning	Anything	32,5	25,0	28,2	0,006
	Little	43,8	40,5	41,9	
	Enough	19,8	27,7	24,3	
	Much	4,0	6,7	5,5	
	Total	100,0	100,0	100,0	

Looking at the tables (1, 2, 3, 4, 5, 6, 7, and 8) above it is concluded that regardless of whether or not ICT activities are carried out, teachers generally have positive opinions, but those who carry out that activities that have a higher probability of recognizing better results of activities. Effectively, the correlation between the activities developed and the effects verified, shows that ICT has the potential to improve the quality of education, improving the effects of activities, which depend on the type of activity:

(1) the probability of involving all students in learning is higher in teachers who integrate ICT in the following activities: information research; discussion of ideas in forums; preparation of text works; conducting presentations with multimedia; develop research and problem solving projects, and engage in interactive exercises.
(2) the probability of greatly improving school outcomes is more significant for teachers integrating ICT to share files, conduct interactive exercises, develop a self-learning diary (portfolios), present content, develop research projects and solve problems. However, the probability of those who do not integrate ICT affirm that they improve a lot is high, revealing the potentiality of the activity by itself.
(3) the probability of saying that it takes up a lot of time is higher in teachers who use ICT to share digital files.
(4) the probability of allowing a more focused learning in comprehension and participation is quite high in the students who write text work with ICT, but very much in those who develop research projects and solve problems with ICT and perform interactive exercises.
(5) the probability of fostering collaborative work is quite a lot in those who work on ICT (although the differences are not significant), develop research projects and problem solving, and engage in interactive exercises.
(6) the probability of deconcentrating students is quite a lot in those who do not use multimedia in the presentations they perform and in those who do not perform interactive exercises.
(7) the probability of feeling motivated students, but with no impact on learning, is higher in those who do not perform multimedia learning nor perform interactive exercises.

In addition, there is a higher probability of the teachers who are trained, the ones who carry out the activities most, namely to plan the work with ICT resources and to use a new working methodology, designing innovative strategies. Although most recognize that they do not use or use few times a new work methodology and self-regulating learning strategies so that the student learns to research and carry out collaborative projects. This result shows that there are factors that inhibit the inclusion of ICTs in education, as shown by Quadros-Flores, Flores and Ramos (2018).

(b) Impact of information and communication technologies on educational practices, according to in-service teachers interviewed

Of the 188 in-service teachers who reported good ICT practice, we interviewed 11 teachers. These teachers have more than five years of service and less than 33 years, which shows that it is not enough to have ICT knowledge (higher in those who complete the initial training), but also some professional experience is required. The analysis of the interviews allowed the categorization of a simple model in order to clearly translate the objectives of the lesson, the curriculum integration, the selected methodology and resources, and also the observed impact. About 90 examples of lessons that teachers believed were good practice were built. Their analysis shows that there are three categories in the design of good practices: the *context*, the *problem* and the *solution* (Figure 1), revealing that the methodology of design and problem-based learning are fundamental today and that ICTs favor the realization.

Figure 1 Categories of good practice

In addition, the analysis of good practice reveals that although there is no evidence of a discontinuity between old and new practices, they do not reinforce traditional methods, as they manifest the birth of methodological changes in order to recreate practices in order to form citizens who are ready for the 21st century, so that they are student-centered practices and that develop research, information selection and interpretation skills, with open knowledge and skills for continuous and autonomous learning, as highlighted by Area (2007) and Manereo and Sources (2005). Moreover, having been asked to describe good practices with ICT, it was found that the models referred to drew up practices transformed with some creativity, originality, efficiency and utility. They were practices that developed other competences, besides the curricular ones, that demanded a different role from the part of the student and the teacher. These practices also showed impacts on the educational process and on the learning outcomes, so they satisfied the actors of education.

Figure 2 Impact of good practice

The content analysis of teachers' words allowed us to construct Figure 3, which shows that good practices in the learning process are current, inclusive practices that interest, motivate, respond and prepare students and which also ensure, satisfy, save, and democratize.

Based on the seven basic principles of good practice referred to by Epper (2004) and Cabero and Román (2006), we wanted to understand the frequency of these principles in the good practices mentioned by teachers in service. It was found that we could not limit ourselves to the seven principles of good practice insofar as others, also significant ones, were mentioned. Thus, we present the sixteen principles of good practice more frequent in educational practices (Figure 3). Good ICT practices encourage problem-solving, communicate high expectations, develop soft skills, respect the diversity of talents and ways of learning, promote satisfaction, increase classroom performance, improve school performance, facilitate the relationship between the school and the family, stimulate active learning, moments of cooperation / collaboration, among others.

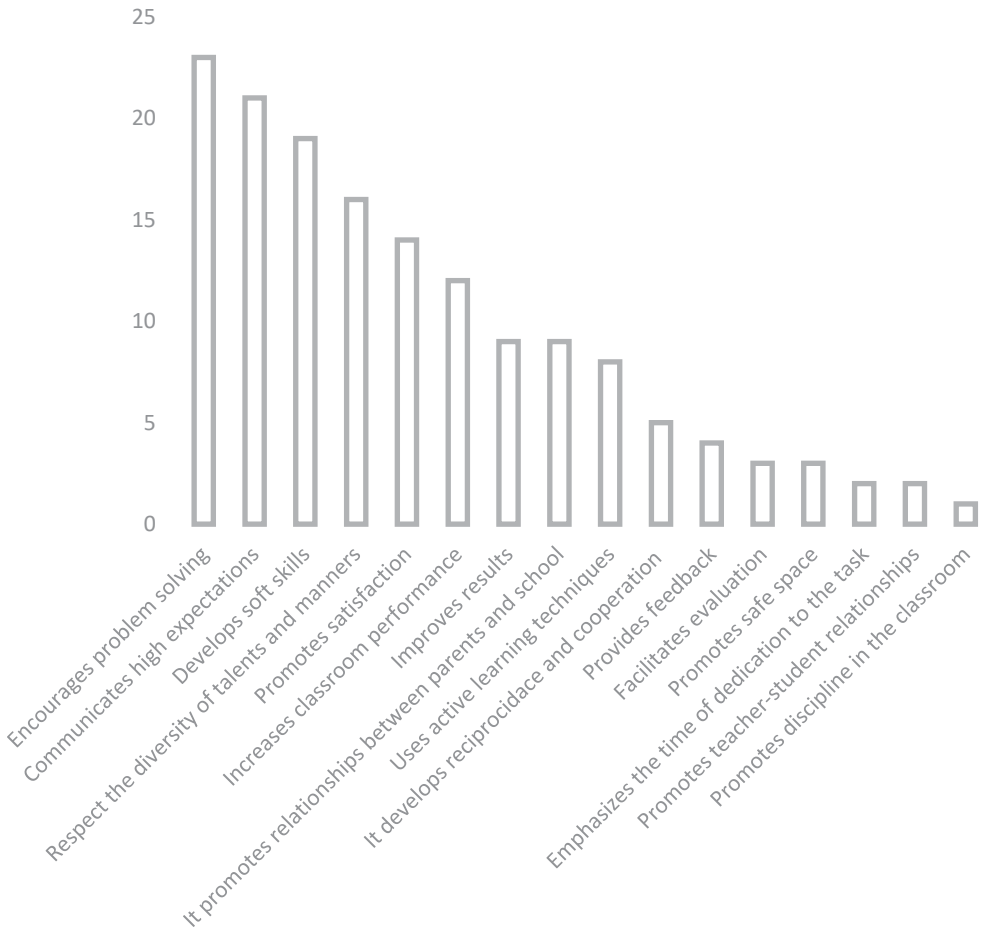

Figure 3 Frequency of good practice principles

(c) Comparing educational practices in different spaces and dimensions

According to our sample, regarding the teachers in service, the youngest ones have the most training in ICT, and we are curious to perceive what kind of practices students carry out during the supervised educational practice in order to understand the evolution of ICT integration.

- Briefly, good practices referred to by in-service teachers (the eleven teachers selected by the best practices) already revealed some methodologies, resources and practices that tried to escape from the traditional teaching. Here are some examples:
- *Methodologies* - WebQuest, curricular articulation, project learning and problem solving, ubiquitous.
- *Resources* - *Word*, CD Software, Internet: web sites, *Moodle*, Blogue, Interactive whiteboards, *Virtual School*, video projector.
- *Educational Practices* - "Students watch a movie, reflect critically on the subject and work collaboratively on the *WebQuest* in solving the problem"; "Students turn on the computer to consult, or write the summary"; "Teacher puts the ranking tests on the computer and these are discussed in the class"; "The teacher starts the lesson with a video ...", "student accesses the evaluation sheet ... solve doubts on the internet"; Interactive whiteboard (QIM) - "the teacher keeps the notes of the class and sends them by email to the student / parents"; "The teacher writes, explains in the QIM and the students perform interactive exercises"; "Students carry out projects to solve problems, research outside school"; "The teacher publishes curricular contents in the Moodle and the students access outside the school", "the teacher creates resources to stimulate the reading; guided the students in the discovery "; "The students took home the links, accessed and presented to their colleagues what they learned." In the classroom students go to the site to develop reasoning for mental calculation, take the links home, with their codes, to train, "students post to the class blog"; "the teacher teaches hypertext"; "The teacher puts stories online,

hotpotatoes in Moodle"; "The student uses CD educational software"; "Students make online dictionary"; "Read the stories and the teacher records them to correct reading"; "The teacher uses CD"; "In a group, students create stories with images from the Internet"; "Rewrite in word processor and autocorrect errors"; "Use virtual school"; "Students use Movie Maker to make video."

In a first exploratory analysis to the narratives of the trainee students they reveal common themes, although they present new dimensions. We give the example of *WebQuest* which is a web-oriented research, supported by collaborative principles. Usually used in a classroom, *WebQuest i*s limited to the interaction of children with information that will make sense to them throughout the stages (Dodge, 2006), insofar as the child establishes a relationship with information to give him meaning: introduction, task, process, conclusion and evaluation. The registration of the interviews of the teachers in service, shows simple *WebQuests*, direct that involve a curricular content, that interact with other curricular areas. Ends with a group presentation to colleagues. The resources used are just the computer and the *WEB.* The registration of the narratives of the trainee teachers tells us about WebQuest in the same line, but they are more demanding in terms of processes and tasks, since they require the integration of several technological resources (*smartphone, iPad, QrCode*, ...), (*video, PowerPoint, Comic, eBook, Avatar* ...), hosted in *Google Drive* allowing the construction of knowledge in the form of *Wiki.* It stimulates, therefore, the triangulation of competences (creativity, literacy, research, decision, presentation, argumentation and foundation) in the execution of tasks, the possibility of interacting with the reality of the world (for example, according to a budget, to simulate the purchase of an airplane ticket, to travel in the country collecting information and images of possible memories as evidences of the culture of the country, to argue with the discussion of the theme of the lesson and resolution of the problem). Trainee teachers build *WebQuests,* more up-to-date due to technological evolution. In addition, its resolution requires the revisiting of different curricular areas in a multidisciplinary and transdisciplinary way, ending not only with the presentation by the groups and collective discussion, but also with a conclusion of the work in an online book format. This evolution also reveals another trend currently discussed and implemented in Portugal: the project of autonomy and curricular flexibility (Dispatch-Law no. 5908/2017, of July 5, 2017) articulated with the profile of the student at the end of compulsory schooling (Oliveira-Martins, 2017) that includes transversal, transdisciplinary competences in a network that mobilizes knowledge, skills, attitudes and values.

It should also be pointed out that in the narratives of trainee teachers we find more active methodologies, absent from the good practices of in-service teachers, as well as other resources that stimulated new strategies and developed other skills closer to the current reality. Due to their relevance and extension, the mentioned narratives will be object of analysis in later publications.

Conclusions

Being aware of social and technological changes means considering a problem in education that requires measures that constitute an effective intervention in order to respond to the demands of a new social, educational and economic paradigm. It was found that these measures are beginning to take shape in order to find a teaching and student profile capable of responding to the demands of contemporary society. In this scenario, emerging technologies are facilitators of opportunities and possibilities, so they are an added value in the learning processes, but require increased training for teachers for their good use in an educational context. But they require more training for teachers to be used in an educational context. What do teachers think about digital resources? What impact on the learning process? What educational practices are designed in this new educational scenario? Who prepares them?

It was found that teachers have a positive opinion about the impact of ICT on education, but it is those who include them in their educational practices who are most likely to confirm this impact. Knowing that teachers who have done good ICT practices have between 5 and 33 years of service and that the probability of the young people possess more knowledge in ICT is higher, this result reinforces the importance of professional experience in the methodological design. However, given the technological evolution and the support of the institutional supervisor in the context of the initial teacher training (character with pedagogical experience), the practices of the students in a stage of education show to be more up-to-date, robust and creative in relation to the student profile expected in this new century. It should be noted that it was also observed that the methodologies adopted are important in the results, so that ICT can facilitate the learning process and add value in education since well selected according to a set of variables and objectives of the class, as reported by Cabero (2003).

It should also be noted, too, that it was found that the contexts are potential influencers of educational practices, as these tend to solve problems by finding solutions from the reflection, anticipation and action and mobilization of knowledge and contextual and disciplinary skills, so we understand the current curriculum based in the essential learning and student profile, as well as the autonomy and curricular flexibility in the promotion of effective and meaningful learning, contextualized according to the interests and needs of all students (Order no. 5908/2017, of July 5).

It was found that the educational practices with ITC meet the needs and interests of the students, are inclusive and that the principles of good practices reveal frequencies of practices in line with current legal and guiding normatives, so we conclude that there are educational niches that preceded the guidelines. This study thus shows the importance of a perspective on practices that respond to the educational moment and to the educational, social and economic paradigm and on the guidelines of education in the new era by teachers. However, ICT practices that could promote interaction with contexts and multiple stakeholders, between schools and other formal and informal institutions, and which could stimulate the proximity of networks of learning spaces and mobilization of knowledge are still not frequent. Other dimensions were found in educational practices that reveal that these are not limited, and that they evolve according to the social and technological advances, with the available resources, education and teaching profile, needs and interests of students and societies.

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