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Teachers in times of emergency remote teaching: A focus on teaching and relationships

Professores em tempos de ensino remoto de emergência: Um foco no ensino e nas relações

Les enseignants en temps de l'enseignement d'urgence à distance: Un accent sur l'enseignement et relations

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Abstract: The abrupt schools closure during the first Covid-19 pandemic wave challenged teachers to rapidly reorganize their educational activities. The changes demanded an increased integration of technologies in teaching and led to sudden transformations of the social and pedagogical relationships. If the accentuation of pre-existing inequalities amongst students became immediately evident, it was less clear how inequalities amongst teachers affected their move to emergency remote teaching. This paper presents and discusses the perceptions and experiences of Portuguese teachers of the effects of this move, drawing from an online survey completed by 675 teachers between 11 and 31 May 2020. Teachers perceived positive effects of the move to emergency remote teaching in the quality of their teaching and on their relationships with students, families and peers, with some differences emerging between teachers from rural and urban areas. Satisfying opportunities for professional development and support during the transition period were crucial to more positive perceptions and experiences.

Keywords: Covid-19, pandemic, emergency remote teaching, relationships, teachers and teaching

Resumo: O fecho de escolas durante a primeira onda de pandemia de Covid-19 desafiou os/as professores/as a reorganizarem rapidamente as suas atividades educativas. Essa mudança exigiu uma maior integração das tecnologias no ensino e levou a transformações repentinas nas relações sociais e pedagógicas. Se o acentuar de desigualdades pré-existentes entre os alunos se tornou imediatamente

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evidente, ficou menos claro como as desigualdades entre os/as professores/as afetaram a sua transição para o ensino remoto de emergência. Este artigo apresenta e discute as perceções e experiências de professores/as portugueses/as sobre os efeitos desta transição no seu ensino e nas relações com outros/as professores/as, alunos/as e suas famílias, a partir dos dados de um inquérito *on-line* respondido por 675 professores/as entre 11 e 31 de maio de 2020. Os/as professores/as perceberam efeitos positivos da transição para um ensino remoto de emergência na qualidade de seu ensino e nas suas relações com alunos/as, famílias e colegas, com algumas diferenças atribuíveis às características territoriais (rural / urbano). As oportunidades de formação e apoio que os/as professores/as tiveram durante o período da transição surgem como cruciais para compreender as perceções de mudanças positivas.

Palavras-chave: Covid-19, pandemia, ensino emergencial remoto, relações, professores e ensino

Résumé: La fermeture des écoles pendant la première vague de pandémie Covid-19 a mis les enseignants au défi de réorganiser rapidement leurs activités éducatives. Ce changement a exigé une intégration accrue des technologies dans l'enseignement et a conduit à des transformations soudaines des relations sociales et pédagogiques. Si l'accentuation des différences préexistantes parmi les élèves devenait immédiatement évidente, il était moins clair comment les différences entre les enseignants affectaient leur passage à l'enseignement d'urgence à distance. Cet article présente et discute les perceptions des enseignants portugais des effets de ce changement dans leur enseignement et dans leurs relations avec d'autres professeurs, élèves et leurs familles, s'appuyant sur les résultats d'une enquête en ligne répondus par 675 enseignants entre le 11 et le 31 mai 2020. Les enseignants ont compris les effets positifs du passage à l'enseignement d'urgence à distance sur la qualité de leur enseignement et sur leurs relations avec les élèves, les familles et les pairs, avec quelques différences expliquées par les caractéristiques territoriales (rural / urbain). Les opportunités de formation et de soutien que les enseignants ont eu pendant la période de transition ont été cruciales pour comprendre les perceptions des changements positifs.

Mots-clés: Covid-19, pandémie, l'enseignement d'urgence à distance, relations, enseignants et enseignement

Introduction

With the first Covid-19 cases growing exponentially worldwide during early 2020, the Portuguese Government declared the State of Emergency ordering schools to close on the 16th of March. Immediately questions arose about how schools and teachers were to reorganize their activities, reach all their students and adapt to distance teaching. This abrupt change demanded schools and teachers to rapidly integrate technologies in their teaching. This

integration was forcibly dependent on the availability of resources, connectivity, competence and autonomy to use specific hardware and software, both from teachers, and from students and their families.

It is likely that this has been the largest disruption of education systems in the history of humankind, and it became clear that it would inevitably have severe impacts in the lives of teachers of all schooling levels, students and their families (European Commission [EC], 2020; United Nations [UN], 2020; Reimers & Schleicher, 2020). On one hand, it was soon realized that closing schools could severely damage the progress of many children and young people, as well as their learning, health and well-being, risking what the United Nations (2020) designated as a "generational catastrophe". On the other hand, this change was accompanied by unprecedented transformations in work configurations – a large proportion of people were for the first time working from home, in lay-off, or unemployed; for families with children in their care, it meant having to be permanently with them including accompanying their school learning activities. These circumstances exacerbated the weight of socioeconomic resources and families engagement in the educational success of children and young people, thus accentuating pre-existing vulnerabilities and educational inequalities worldwide (EC, 2020; UN, 2020), both at the core of policies and initiatives at several levels[1] and of dilemmas regarding the decision of new school closures.

School closure also entailed sudden transformations in the social and pedagogical relationships they enabled. While peer relationships are essential to social competence and emotional well-being (Wentzel, 2017), relationships between teachers and families or caregivers contribute to both parental and student engagement thus favoring educational success (Goodall & Montgomery, 2014). Furthermore, teacher-student relationships are key in enhancing student academic achievement (Quin, 2017), while also contributing to the professional identities of teachers (Pereira & Mouraz, 2015) ultimately affecting the quality of the learning activities they promote. Another important factor affecting this quality was the increase in the workload and professional responsibilities of teachers when they were called upon urgently adapting learning activities to new formats and modalities, while also struggling to reach all their students. In a profession still dominated by women, this challenge was disproportionately higher for many female teachers, since they are still the ones who generally take on more family and domestic responsibilities (Krentz et al., 2020). Therefore, female teachers may have struggled more to reconcile domestic responsibilities – for instance, accompanying their own children in online classes – with the professional responsibilities that this new situation of remote teaching required (Vidal, 2020). Additionally, the age of the Portuguese teaching workforce has rapidly risen in the past 10 years,

[1] For example, the Global Education Coalition sponsored by UNESCO https://globaleducationcoalition.unesco.org/.

reaching an average of 44 years old in 2018 (OECD, 2019). This has several implications to their well-being and professional commitment (EC/EACEA/Eurydice, 2021). While the increase in teachers' stress and burnout is deeply rooted in lack of career progression and erosion of work conditions as well as of the perceived social value of the teaching profession (Alves & Lopes, 2016; EC/EACEA/Eurydice, 2021), it also derives from growing pressures to change and the innovation challenges to their pedagogical knowledge and to the experience they accumulated in years of practice (Orlando, 2014). In this unprecedented emergency scenario, the pressure to change, namely through the use of digital technologies, was sudden and in many cases unavoidable. Consequently, those teachers who had some experience or training in the use of digital technologies in teaching entered with some advantage in the remote teaching routines during the pandemic crisis. Relying on data from the *Teaching and Learning International Survey* (TALIS) of 2018, Andreas Schleicher pointed out that many teachers from OECD countries, despite having some experience, still reported a strong need for training in the use of digital technologies in teaching (Schleicher, 2020). Moreover, very few had specific training in distance learning or participated in professional development on distance learning schemes. That is why, despite this sudden push to change through the use of technologies in teaching, many teachers have simply opted to use their usual teaching routines accommodating them with synchronous or asynchronous modes of communication with their students. Such adjustments of rapid and temporary responses of instructional support have been named "emergency remote teaching" (Hodges et al., 2020; Whittle et al., 2020), to prevent schools and teachers to identify them as online learning schemes that have specific and distinct pre-planned features in aspects such as modality, pacing, pedagogy, the roles of students and teachers, online communication synchronicity, assessment and feedback (Hodges et al., 2020).

In sum, educational responses to school closure due to the Covid-19 pandemic highlighted inequalities and vulnerabilities in children and young people, but also in the conditions and preparedness of teachers to face the digital disruption challenges of the 21st century, as well as their implications for educational change and innovation. It also challenged existing social and pedagogical relationships with the potential for both positive and negative renewal. In this paper we focus on teachers and on how they perceived changes in the relationships with other teachers, with students and with families while teaching remotely during the pandemic emergency, as well as effects on the perceived quality of their teaching. To further understand differences in teachers perceptions we look at the role of demographic variables, contextual factors and prior experiences with digital technologies in teaching, as well as the level and types of support (by institutions or peers) that teachers received during this period. We focus on the following questions: i) how did teachers, from preschool to basic and secondary education levels, see the move to emergency remote teaching, as it was implemented, change their educational work and

the quality of the relationships with other teachers, with students and with their families? ii) how were teachers' gender, family conditions (number of children or other dependents at home while working from home, availability of dedicated or shared work equipment), and the contexts of schools' location (urban, rural) related to their experience of how these relationships changed; and, iii) what was the role of the opportunities for professional development and support in counteracting negative impacts of emergency remote teaching in the educational work and in the working relationships that teachers and educators maintained during this period?

Emergency remote teaching: the responses in Portugal to a global challenge

When schools closed in Portugal on the 16th of March, an electronic page of support for schools was launched by the Directorate-General for Education, in conjunction with the National Agency for Qualification and Vocational Education, I.P., where little by little, suggestions of resources and guidelines to promote the continuity of teaching and learning in schools (https://apoioescolas.dge.mec.pt/) were made available. This platform was progressively filled with pedagogical practices shared by teachers to develop the essential learning[2] in specific subjects and the competencies of students in a distance learning modality. In this first phase, schools also organized the assessment of their students' social and technological support needs. In addition, the main publishers for textbooks and educational materials operating in the Portuguese market also responded to the emergency by opening their digital platforms to any students and teachers who needed them. Likewise, the dominant companies in the market for digital distance learning (Google, Microsoft) and video conferencing platforms (Zoom) have increased their server capacity and provided tools to support teaching in response to worldwide demand. At the end of March, the Directorate of Education sent to schools a short guide with principles and steps for the design and implementation of their Distance Education (E@D) Plans[3]. Schools were supposed to adjust these to their specific contexts and needs. They were followed by support roadmaps for the implementation of the Google Classroom® and Microsoft Teams® digital learning platforms, in line with such principles. From these guidelines, schools would

[2] The recent curriculum reform in the Portuguese Basic and Secondary Education Curriculum began to be established in the Students' profile when leaving compulsory schooling (https://www.dge.mec.pt/noticias/perfil-dos-alunos-saida-da-escolaridade-obrigatoria), through the definition of areas of competence to be developed and, afterwards, in the definition of Essential Learning (https://www.dge.mec.pt/aprendizagens-essenciais-0) to be developed in each curricular subject according to those areas of competence and articulated with each other in the horizontal and vertical planes.

[3] Available here: https://www.dge.mec.pt/sites/default/files/roteiro_ead_vfinal.pdf (PT)

be called upon to set up support teams to provide answers to the social and pedagogical issues that would emerge, including the organization of specific resources and tools that, in many cases, incorporated internal guidance documents and teacher professional development sessions. After the Easter break[4], the concern was focused on monitoring, assessing and certifying student learning, with a set of exceptional and temporary measures being published (DL nº 14-G / 2020) to deal with the questions being raised, but also to bind students and teachers to the distance learning plans that were being developed by schools. At that time, additional support for teachers came in the form of the Digital Teaching Network Training Course, resulting from the partnership between the Directorate-General for Education and the Open University, the Portuguese public educational institution with the most consolidated work in digital education. This course was prepared to equip its participants, teachers in leading positions in schools, with skills that would enable them to support other teachers in their schools in the progressive transition from an instrumental use of technologies in emergency remote teaching, to a quality digital education, in collaborative and constructive environments (Nobre et al., 2021). In April, the issues of inclusion became more pressing, resulting in the release of specific guidelines[5] for multidisciplinary teams working in schools to support inclusive education and launch educational programming for basic education students on air all day long in a TV open channel[6], in an additional attempt to reach students who, by then, still lacked the necessary equipment or Internet connectivity (Menezes Junior, 2020).

A study of the Ministry of Education that monitored the evolution of the educational responses of schools through their distance education plans, generated a first picture of the communication, teaching, learning and evaluation strategies in March (Direção Geral de Estatísticas de Educação e Ciência [DGEEC], 2020). According to the views of Headteachers, teachers of all levels of education used quite diversified resources during emergency remote teaching, with a preference for physical and digital textbooks, the online versions offered by publishers in their digital platforms, resources shared on the Internet and resources that they had created themselves for distance teaching. Most schools reported that their teachers preferred asynchronous communication over synchronous, in all school levels, despite the fact that adherence to forms of synchronous communication has increased over time. Thus, communication between teachers and students was, in the beginning, mostly asynchronous through email and messaging services (WhatsApp and SMS). Such preference resulted in individual (teacher to student) over collective (group

4 The Easter break started on Monday, May 30, 2020 and ended on Monday, April 13 2020.

5 Available here: https://apoioescolas.dge.mec.pt/sites/default/files/2020-04/Orienta%C3%A7%C3%B5es_para_o_trabalho_das _Equipas_Multidisciplinares_de_Apoio%C3%A0Educa%C3%A7%C3%A3o_Inclusiva_na_modalidade_E@D.pdf (PT).

6 #EstudoEmCasa available in: https://www.rtp.pt/play/estudoemcasa/ (PT).

class) communication, which was particularly dominant in the 1st cycle of basic education (ages 6 to 10). Synchronous activities, namely through digital platforms or videoconference systems, was more common in the 3rd cycle of basic education (ages 12 to 15) and secondary education (ages 15 to 18), since the beginning of distance education, and its use has been extended to other teaching cycles towards the final term of the school year. The formative assessment of students' learning was mainly based on feedback to individual student assignments. Furthermore, towards the final term, the use of online tests and the assessment of students' presentations in online classes increased. The concern of schools and teachers in providing feedback to parents or guardians regarding the students' learning progress was particularly significant in the 1st cycle of basic education (ages 6 to 10), where students, being less autonomous, required increased monitoring from families. However, this concern was progressively extended to other school levels, in most schools, more towards the final term of the school year (DGEEC, 2020).

In addition to the Ministry of Education, several research teams mobilized efforts to monitor educational responses, mostly through online surveys to teachers, students and their families. Reis and colleagues (2020a, 2020b) questioned teachers about the solutions they adopted for remote teaching during the pandemic. Drawing upon a sample of 1586 teachers who responded to the questionnaires between 25 March and 8 April, the authors (Reis et al., 2020a) reported that the majority of teachers (85%) sent study materials to their students, such as worksheets or group work assignments. Three quarters of them (75%) claimed to attend to students' doubts while they studied from home, and nearly 40% sent content to their students that were prepared by others rather than themselves. In this first phase of the pandemic, 30% of the teachers already organized classes by videoconference and 12% recorded videos to send to their students. Only a small fraction of the surveyed teachers, 2%, reported that they had not developed any distance learning strategies. The teachers were satisfied with their own adaptation to remote teaching, but also with the adaptation of students and tutors/guardians. But a month later, in May 2020, and from a sample of 2647 teachers, the same authors (Reis et al., 2020b) noted a widespread adherence to classes using videoconferencing (88%) together with sending working materials and assignments to their students (98%) and attending to the doubts of students using the Internet (90%). Teachers also increased their use of materials made by others (65%) and the recording of videos to be sent to their students (22%).

Dias-Trindade et al. (2020) questioned teachers from Portugal and Brazil about their practices when implementing emergency remote teaching. In the particular case of Portuguese teachers (n = 139), and similarly to the study of the Ministry of Education, they detected a diversification of modes of action, between synchronous, asynchronous contacts and monitoring by email or messaging services. When questioning teachers directly, they also listened to the difficulties they experienced, the accumulation of workload and time management as the most common (28.1%).

The increased distance of students and the pedagogical difficulties it created was also mentioned (9.4%). Only 7.9% admitted having suffered technical problems. Also, it cannot be disregarded that 7.2% admitted struggling with the actual physical distance from their students and decreased levels of affective relationships.

Methodological approach

This study focuses on the changes faced by teachers of all levels of schooling, from pre-school to upper secondary education, as a consequence of the move to emergency remote teaching during the period of the first confinement in Portugal. It addresses three main questions. The first focuses on exploring how these changes affected their educational work and the quality of the relationships with other teachers, with students, and with their families. Secondly, we want to see how teachers' gender, family conditions (number of children or other dependents while working from home, availability of dedicated or shared work equipment), and contexts of living (urban, rural) relates to their experience of how their educational work and work relationships changed. Finally, we look at the role of opportunities for professional development and support, and of the prior experience with digital tools in counteracting potentially negative consequences of the move to distance teaching.

An online questionnaire was sent to teachers using a variety of communication channels, such as email requests sent to unions, other professional organizations, and formal networks of teachers; and Facebook, focusing in pages and groups of teachers. We collected responses between the 11th and the 31st of May 2020. This generated a convenience sample of 675 teachers from diverse regions of Portugal. The questionnaire completion was voluntary and all the procedures to ensure the participants' anonymity and data confidentiality were guaranteed.

The questionnaire addressed five main groups of questions: 1) personal characterization; 2) professional characterization; 3) conditions for distance teaching; 3) perceptions of the diversities and inequalities in accessing distance education; 4) personal well-being and the school community. Besides describing some of their personal and professional characteristics and conditions, we will look at the perceptions of teachers of how emergency remote teaching has been carried out, namely how the required changes have forced teachers to challenge their professional practices, and competence, their uses of digital technologies and working relations. Other dimensions (e.g., personal sense of well-being, sense of community), although present in the questionnaire, are not going to be included in this paper. Collected data was analysed using SPSS® version 25.

Participant teachers

A total of 675 teachers, from preschool, basic and secondary education levels, participated in the study. A majority of the respondents are women (89.6%, n=605) in a proportion higher than the national proportion of female teachers, which has been around 78% (OECD, 2019). The respondents are on average 49.8 years old (Min: 23; Max: 67 years old; SD=7,554; n=672), which is higher than the national average of 44 years old (OECD, 2019), and their ages are distributed according the following four groups: 39 years old or less (8,7%, n=59); between 40 and 49 years old (40.3%, n=272); between 50 and 59 years old (40.4%, n=273); and 60 years old or more (10.1%, n=68). We joined the younger groups of ages (less than 30 and 30 to 39), since much like the actual national age distribution, our group of teachers with less than 30 years old was only around 1%. Moreover, while in Portugal around 41% of teachers have 50 years old or more (OECD, 2019), this study's participant teachers in that age group account for 50.5% of the total of respondents. On average, their years of experience was 25.8 years (M=25.8 and SD=8.050), with the vast majority reporting more than 20 years of teaching experience (80.9%, n=546).

We also asked participants if they had children or other dependents they had to take care of. A total of 271 participants (40%) declare having no dependents under their care. Among those who had, 217 (32.1%) had one child or dependent, and 185 (27.4%) had two or more. Because having to share equipment could pose an extra obstacle, we inquired about it: a total of 222 (32.9%) participants shared their equipment with other people in the house.

Most of the participant teachers reported working in public schools (88.1%, n=595). Also, 46.4% of the respondents stated that their school was located in a predominantly urban area (n=313), 36.7% in a semi-urban area (n=248) and 16.6% work in schools located in rural areas (n=112).

The sample includes teachers from all school levels[7]: 74 (8.4%) preschool teachers, 150 (22.2%) 1st cycle of basic education teachers (grades 1 to 4), 100 (14.8%) 2nd cycle of basic education teachers (grades 5 and 6) and 262 (38.8%) 3rd cycle of basic education and upper secondary teachers (grades 7 to 12), as well as 60 (8.8%) special needs education teachers.

It is interesting to note that 203 of the respondent teachers (30.1%) are class tutors, which in Portugal presumes extra responsibilities in monitoring the students' learning conditions and difficulties as well as mediating the contacts between the school and the families. Two hundred and twenty three participants declared that they did not have any special role or position in their

[7] Details on the Portuguese schooling levels can be consulted in the EURYDICE webpage: https://eacea.ec.europa.eu/national-policies/eurydice/content/portugal_en

schools (33.0%) while 249 (36.9%) mentioned having a variety of other roles in their schools (e.g., coordinating a subject department, course, or other educational structures such as school premises, laboratories, sports infrastructures, curriculum or pedagogical innovation projects or international cooperation and interchange projects).

Participants in the study were asked about which digital technologies they were most often using and how competent they felt using them. As Tables 1 and 2 clearly illustrate, participants in the study generally consider themselves to be competent in using the technologies that are most often used. Learning management software, video conferencing software and email are used at least several times a week by more than 70% of the participants. Included in the highest competence levels – independent user and user able to support others – are 76.2% of teachers for learning management software, 85.3% for video conferencing software and 93.5% for email.

TABLE 1

Use of digital technologies for educational purposes during the school closure period

	Never or almost never	At least once a month	At least once a week	Several times a week	Everyday
Learning management software (e.g., Moodle, Google Classroom)	16.6%	3.4%	9.5%	19.2%	51.2%
Video conferencing software (e.g., Zoom, Google Meet, Jitsi)	8.7%	3.2%	16.3%	33.0%	38.8%
Software to record and share video classes (e.g., Panopto, Opencast)	56.1%	11.3%	15.3%	10.9%	6.4%
Software for group work or collaboration (e.g., Slack, Microsoft Teams)	37.4%	7.5%	15.3%	14.8%	25.0%
Software used for chat (e.g., WhatsApp; Skype; Messenger)	23.1%	12.5%	17.8%	22.8%	23.9%
Email	3.5%	3.5%	10.5%	17.1%	65.5%

We also questioned participants regarding their prior experiences or professional development in distance education (only 13.9%, n=94, had had it) and their access to support or development initiatives to deal with difficulties with educational technology during that period. A minority reported having had no need for support or development (16.6%, n=112). Among those who felt they needed, 39.9% (n=269) considered they did not manage to have access to sufficient support or development opportunities, while the remaining 43.1% (n=291) thought the support

they had was good enough. When asked about which were the main sources of this support, teachers most frequently indicated their schools or their school leadership boards (n=319, 47.3%), other teachers (n=293, 43.1%), the Internet and social media (n=196, 29%), and family or friends (n=160, 23.7%).

TABLE 2

Perceived competence in using different digital technologies for educational purposes

	Never tried to use	Can not use	Can use with support	Can use indepen-dently	Can support others
Learning management software (e.g., Moodle, Google Classroom)	5.3%	0.6%	17.9%	47.3%	28.9%
Video conferencing software (e.g., Zoom, Google Meet, Jitsi)	2.1%	0.5%	12.1%	51.5%	33.8%
Software to record and share video classes (e.g., Panopto, Opencast)	29.9%	6.0%	26.9%	27.5%	9.7%
Software for group work or collaboration (e.g., Slack, Microsoft Teams)	21.4%	5.5%	21.7%	31.3%	20.0%
Software used for chat (e.g., WhatsApp; Skype; Messenger)	3.2%	1.2%	9.8%	33.9%	51.8%
Email	0.6%	0.6%	5.3%	23.4%	70.1%

Findings

This section is structured in three different parts following the research questions.

Perceived effects of the move to emergency remote teaching

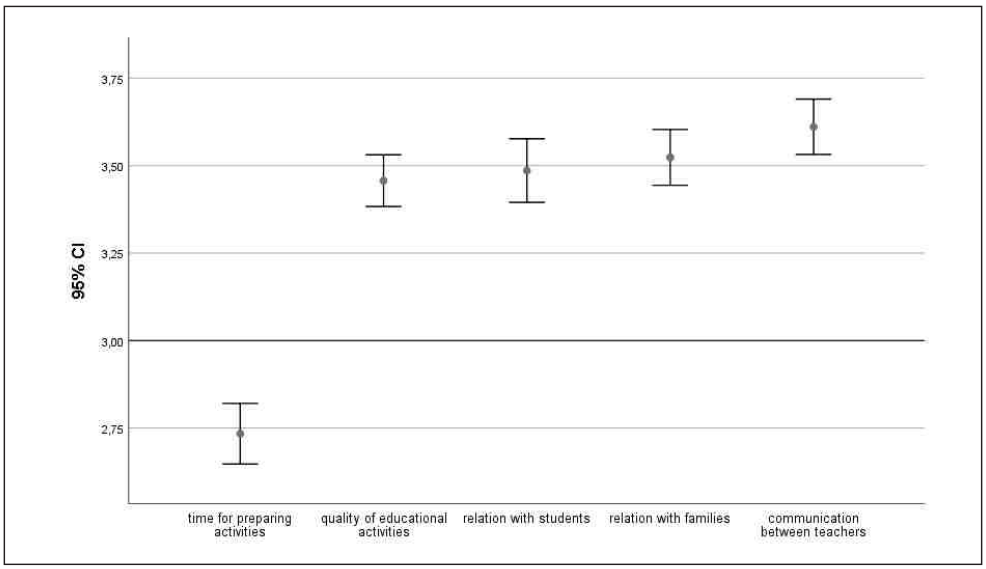
Firstly we wanted to explore how teachers saw the move to emergency remote teaching affect their educational work and their work relationships with fellow teachers, with students and with their families. We asked participants how they thought the conditions had affected "the amount of time to prepare class activities", "the quality of the proposed educational activities", as well as "the relation with students", "the relation with families" and "the communication between teachers" on a 5 point Likert scale varying between "very negatively" (1) and "very positively" (5).

Results (see Figure 1) indicate that teachers saw the move to emergency remote teaching affect their time to prepare class activities in a slightly negative manner (M=2.73; SD=1.14; n=665), but not the quality of the proposed educational activities, which they saw as being slightly positively influenced (M=3.46; SD=0.97; n=665). Relationships with students (M=3.49; SD=1.20; n=667), families (M=3.52; SD=1.04; n=667), and the communication between teachers (M=3.61; SD=1.04; n=663) was also affected slightly positively according to the teachers' views.

A slightly positive outlook on how the situation was handled in schools was also observable when we asked participating teachers how the actions taken by their school in response to the situation changed the way they saw their school (M=3.73; SD=0.92; n=672; in a 5 point scale between 1 – "changed for worse" and 5 – "changed for better").

FIGURE 1

How participants perceived the circumstances affected dimensions of their work and working relations



Note: The scale varies between 1 and 5. The midpoint, 3, is emboldened for clarity.

Differences in the perceived effects

Secondly, we found it important to understand how the perceived changes in "the amount of time to prepare class activities", "the quality of the proposed educational activities", "the relation with students", "the relation with families" and "the communication between teachers"

would vary considering different characteristics and experiences of participants, and their school contexts. Besides gender and age, we included personal characteristics that could lead to inequality while working from home – the number of children or other dependents under care; and the need to share equipment with other people in the same house.

These first two MANOVAs did not identify multivariate effects of gender (Pillai's Trace=0.003; F(5)=0.407; p=0.844; eta2=0.003), age group (Pillai's Trace=0.014; F(15)=0.607; p=0.872; eta2=0.005)[8], sharing equipment (Pillai's Trace=0.014; F(5)=1.810; p=0.109; eta2=0.014) or having children or other dependents (Pillai's Trace=0.022; F(10)=1.388; p=0.180; eta2=0.011)[9] on "the amount of time to prepare class activities", "the quality of the proposed educational activities", "the relation with students", "the relation with families" or "the communication between teachers".

Work-related variables – performing roles other than teaching such as being a class tutor – and characteristics of contexts – schools were located in urban, semi-urban or rural areas – were also included. The MANOVAs found no statistically significant effects of having roles beyond teaching (as a class tutor or other: Pillai's Trace=0.026; F(10)=1.677; p=0.081; eta2=0.013), but the characteristics of the context where the school was located (urban, semi-urban or rural), was found to have a verifiable effect (Pillai's Trace=0.042; F(10)=2.746; p=0.002; eta2=0.021). As reported in Table 3, the effect of urban, semi-urban or rural context is statistically significant on "the quality of the proposed educational activities" (F(2)=4.729; p=0.010; eta2=0.014), "the relation with students" (F(2)=13.200; p=0.0001; eta2=0.040), and "the relation with families" (F(2)=4.604; p=0.013; eta2=0.014). All effect sizes are small, except for that on "the relation with students" which is medium. A possible violation of assumptions should make us careful in interpreting this result.

Table 3

Values for Levene's Test and the Tests of Between-Subjects Effects for school context

Variable	Levene stat (p)	F	df	p	eta2
time to prepare class activities	0.45 (.886)	0.79	2	.450	.003
quality educational activities	0.48 (.885)	4.60	2	.010	.014
relation with students	2.14 (.030)	13.20	2	.001	.040
relation with families	1.67 (.102)	4.38	2	.013	.014
communication between teachers	1.11 (.383)	2.11	2	.121	.007

[8] No statistically significant interaction effects were identified either (gender*age group: Pillai's Trace=0.023; F(15)=0.997; p=0.456; eta2=0.008).

[9] Interaction effects were not statistically significant (dependents*sharing equipment: Pillai's Trace=0.016; F(10)=1.046; p=0.402; eta2=0.008).

A closer look at the values for the different groups – see Table 4 – shows us that, even though the averages are slightly positive (above 3, the scale's midpoint) for all groups, it was possible to verify that the challenge posed by moving to online learning was particularly productive for those working in rural areas. Participants from schools located in rural areas, more than those from urban contexts, considered the move to online learning to have a positive impact in the "the quality of the proposed educational activities" (p=0.008), "the relation with students" (p=0.0001), and "the relation with families" (p=0.010).

Table 4

Estimated marginal means for access to school context (urban, semi-urban or rural)

variable		M	std error	CI lo	CI hi
time to prepare class activities	urban	2.69	.660	2.56	2.82
	semi-urban	2.72	.740	2.58	2.87
	rural	2.85	.112	2.63	3.07
quality educational activities	urban	3.34	.056	3.23	3.45
	semi-urban	3.44	.063	3.31	3.56
	rural	3.68	.095	3.49	3.87
relation with students	urban	3.30	.068	3.16	3.43
	semi-urban	3.51	.076	3.36	3.66
	rural	3.98	.115	3.75	4.21
relation with families	urban	3.44	.060	3.32	3.56
	semi-urban	3.51	.068	3.38	3.64
	rural	3.79	.102	3.59	3.99
communication between teachers	urban	3.53	.060	3.41	3.64
	semi-urban	3.61	.067	3.48	3.75
	rural	3.77	.102	3.57	3.97

The role of the opportunities for support and development

Finally, we explored the possible effects of prior experiences or professional development in distance education, or, of access to support or professional development to deal with difficulties or challenges with educational technology in this period where emergency online learning was required. The MANOVA could not identify an effect of having prior experiences or professional development in distance education (Pillai's Trace=0.009; F(5)=1.144; p=0.336; eta2=0.09). Having

access to support or professional development initiatives, in this period, was found to have an effect (Pillai's Trace=0.046; F(10)=2.985; p=0.01; eta2=0.023)[10]. Further exploring the effect, it was verifiable that access to support or development initiatives produced differences in "the amount of time to prepare class activities" (F(2)=7.280; p=0.01; eta2=0.022), "the quality of the proposed educational activities" (F(2)=5.974; p=0.03; eta2=0.018), "the relation with families" (F(2)=3.718; p=0.025; eta2=0.011) and "the communication between teachers" (F(2)=4.050; p=0.018; eta2=0.013) – see Table 5.

Table 5

Values for Levene's Test and the Tests of Between-Subjects Effects for access to professional support or development

Variable	Levene stat (p)	F	df	p	eta2
time to prepare class activities	0.35 (.882)	7.28	2	.001	.022
quality educational activities	6.86 (.0001)	5.97	2	.003	.018
relation with students	7.07 (.0001)	2.71	2	.068	.008
relation with families	2.57 (.026)	3.71	2	.025	.011
communication between teachers	4.24 (.001)	4.06	2	.018	.013

In Table 6, we observe the values for the different groups.

Table 6

Estimated marginal means for access to professional support or development

variable		M	std error	CI lo	CI hi
time to prepare class activities	without access	2.36	.143	2.082	2.65
	with access	2.92	.092	2.74	3.10
	without need	3.03	.116	2.80	3.26
quality educational activities	without access	3.23	.123	2.99	3.47
	with access	3.73	.079	3.58	3.89
	without need	3.55	.100	3.36	3.75
relation with students	without access	3.30	.151	3.00	3.59
	with access	3.67	.097	3.48	3.86
	without need	3.72	.123	3.48	3.96

(continued)

[10] No interaction effect was identifiable (experience_distant*development_support Pillai's Trace=0.014; F(10)=0.919; p=0.515; eta2=0.011).

variable		M	std error	CI lo	CI hi
relation with families	without access	3.26	.134	2.99	3.52
	with access	3.68	.086	3.51	3.85
	without need	3.62	.109	3.406	3.883
communication between teachers	without access	3.46	.132	3.202	3.721
	with access	3.85	.085	3.680	4.014
	without need	3.54	.107	3.337	3.758

They show us that averages are generally lower for those who, having felt the need for professional support or development, did not have access to it. For this group "the amount of time to prepare class activities" was negatively affected, and more so than for those who had access to support or development (p=0.003) or those who did not feel the need for any further support or development (p=0.001). For "the quality of the proposed educational activities", the difference was statistically significant only between those with and without access to support or development. Those without access to professional support or development initiatives judged the impact on the "quality of the proposed educational activities" to be less positive (p=0.002; note that it was slightly positive for all groups). The same pattern was found for "the relation with families" (p=0.022) and for "the communication between teachers" (p=0.044). It should also be taken into account that effect sizes are small and that, in some of the analysis, there are possible violations of assumptions, as indicated by the results of Levene tests.

It becomes clear that those who had access to professional support or development initiatives benefited from it. Even when the participants saw their move to online education, as it happened, to have (slightly) positive changes to the quality of the educational activities and to the relations they kept with families and other teachers, the benefits of having access to support or development were visible, as those who felt the need and had no access reported lower results.

Discussion

Our findings revealed a positive perception of the participating teachers regarding the effects of the quality of the educational activities they organized. This positive perception echoes an also positive view of teachers about their own adaptation to distance teaching reported in April by Reis and colleagues (2020b), who found that teachers had a positive view regarding the adaptation of students and families as well. Moreover, and unlike what was expected, teachers generally perceived and experienced some positive effects of the transition to remote teaching, with all the

adaptations it implied, in their relationships with students, families, and with fellow teachers. In our view, these perceived positive effects can be explained by three main sets of reasons.

First, in the beginning, as teachers struggled to reach all their students, they established diversified and intensified the communication channels with students and families. Flores and Gago (2020) noted that teachers made several efforts to maintain interactions with their students, adopting online teaching and readjusting their pedagogical approaches and assessment practices. While in some cases, teachers simply transposed their classroom teaching practices to remote teaching, in other situations the development of creative alternatives and the use of tools such as Skype, Zoom, WhatsApp, and so forth, took place not only for online teaching but also for closer contact with students (Flores & Gago, 2020). This was also indicated by the progressive increase of teachers' use of both synchronous and asynchronous modes of communication throughout the school closure period (DGEEC, 2020; Reis et al., 2020a, 2020b).

Second, as teachers made an effort to adapt their teaching in effective ways, many also intensified communication with colleagues and other teachers, from their schools or others, when seeking support for the adaption of their teaching, including access to materials, tools and networks. Almost half of our participant teachers (43.1%) responded that they found support in other teachers and nearly 30% pointed out to the support they had from the Internet and social media. For instance, the Facebook group *"E-learning – Apoio a professores"* [E-learning – Teacher Support] created by two Portuguese teachers as soon as schools closed, gathered 10000 members in the first 48 hours and has since then gained a more formal constitution. These and other examples of social media groups were key in bringing teachers together and activating formal and informal professional learning communities (Dotta et al., 2019).

Third, the intensification of pedagogical, social and professional relationships using digital channels might have been one of the most accessible ways to counteract the negative effects of the isolation determined by the confinement during the first pandemic wave on mental health and well-being (Mendes-Santos et al., 2020).

Teachers promptly responded to the push to educational change and they intensified communication with students and families and this may have also increased the perceived social value of the teaching profession. As students and families could actually see the effort many teachers were putting in learning new tools and strategies and adapting their activities, their essential role in reaching all students and mediating effective learning in different contexts and with digital tools was widely recognized. This perception of an increased social value and recognition may have contributed to counteract the professional frustration and disillusionment that were experienced by many teachers and which Meister and Ahrens (2011) named plateauing. This phenomenon is more commonly observed in more experienced teachers when they perceive their work as repetitive and undervalued. New challenges in a context where many were trying

to find ways to solve new problems, and the perception and recognition that some difficulties were overcome (e.g., with and by other teachers, local authorities, parents or in social media groups, in collaborative, collective and relational contexts) may have (even if temporarily) countered the plateauing effect.

The role of intensified communication and of a new sense of necessary closeness in educational support, made especially salient by the crisis situation, may also help explain why teachers from rural areas, more than those in urban contexts, experienced a positive impact from moving to online learning in the quality of the proposed educational activities, the relation with students, and the relation with families. It is not possible, in the context of the current research, to explain why this may have been the case but it is possible that this dynamic of social recognition was stronger in rural areas due to higher levels of relational closeness (Starret et al., 2021).

Our findings also align with those from Dias-Trindade et al. (2020) regarding the perception of an increased workload and more difficult time management for teachers. Regarding this issue, the answers provided by 2647 teachers to the survey by Reis and colleagues (2020a) also point to an extra workload – teachers perceived to be working in the remote teaching scheme an average of 11 extra hours per week. This highlights the need for clearer and better-defined distance education plans, as well as stronger support documents and platforms, timely and widely available to schools and teachers. However, we must highlight that most participant teachers, at the time of the inquiry, felt relatively competent in using the digital technologies they were using for educational purposes, either independently or with the support of others. So the issue here is not about the usual training offers in the technical use of software or about fulfilling schedules, contact hours and rigid norms. It is about responding to the actual pedagogical needs of the teachers, about supporting them in understanding how to adapt their educational activities to effective distance education in a pedagogically meaningful way. The importance of having access to adequate professional support and development initiatives when dealing with difficulties was emphasized in our results. Those who experienced difficulties and found support were also those who perceived and experienced remote emergency teaching as having the most positive effects on the quality of the proposed educational activities, the relation with families, and the communication between teachers. While there were no specific recommendations in Portugal for initial teacher education programs to deal with the abrupt changes in this disruptive scenario (Flores & Gago, 2020), research in teacher education and professional development for innovative learning environments and the use of technologies (e.g., Orlando, 2014) has been promptly adapted to support a progressive transition from emergency remote teaching to effective distance education or online learning (e.g., Nobre et al., 2021; Whittle et al., 2020). Our research can contribute in understanding the shape these professional support and development contexts could have to be experienced by teachers as satisfying and productive.

Concluding remarks

Our findings suggest that teachers from preschool to basic and secondary education levels experienced an increased workload in the transition to remote teaching, but were satisfied with how this imposed adaptation affected the quality of their teaching. They also perceived positive effects of the transition in their relationships with their students, the families and their fellow teachers. Unlike what we expected, and apart from the fact that teachers from schools in rural areas seemed to report more positive effects than teachers from schools in urban areas, it was not possible to find any effects of variables such as gender (probably complicated by the small sample of male teachers), the number of dependents at home or having to share equipment with others. What became clear was that opportunities for professional support and development that were provided or found during the pandemic were key in shaping the teacher's experience during the transition phase.

Concerning teacher education and professional development, we have to consider that the body of teachers in our sample (and in Portuguese schools) is generally not young (mean age 49.8 years old) and is highly experienced, the majority has more than 20 years of teaching experience. Contradicting some myths and beliefs about their inability to use technologies in education (Dotta et al., 2019), they appear open to educational change and innovation. They are likely to face cultural, political, pedagogical and conceptual dilemmas of change (Orlando, 2014) in particular due to their accumulated teaching experience and to the fatigue that comes from their experience of successive political reforms with little impact in the traditional school model (Nóvoa & Alvim, 2020). As such, teacher education and support in the transition to more effective distance education must come from multiple sources and must include in-service professional development that responds directly to the needs of teachers, and supports collaborative work and the expansion of professional learning communities (Dotta et al., 2019).

Online learning has allowed parents the possibility of entering the 'classroom' and observing their children's classes, and teachers became more interdependent with parents and each other. This interdependence stimulates a more open professional capital, as Hargreaves and Fullan (2020) define, and may lead to interesting ways of involving parents in their children's school activities. While becoming more open professionals, teachers also need to recognize the importance of trusting relationships with parents, of giving them active support to help their own children in the learning process (Hargreaves & Fullan, 2020, p. 331). In this sense, the fact that almost everyone has had to work from home managing both the availability and necessity of digital platforms may have contributed to strengthening collaborative relationships. As such, by promoting "digital opportunities to enhance existing professional capital and community, we will have the chance of a lifetime to transform learning for the better" (p. 334).

The pandemic circumstance that we have been experiencing since 2020 has, in fact, implied a set of changes, both from the point of view of the relationship with society and with regard to the relationship with knowledge. In one way or another, the role of teachers and the recognition of a humanist view of education constitute core vectors to guarantee the maintenance of the school and its mission (Nóvoa & Alvim, 2020). This means that the transformation of the relations between school and community agents cannot be disregarded or seen as less important than the digital and technological transformation that became the focus during the pandemic induced school closure. If so, it might in fact undermine central dimensions of education, such as human interactions, conviviality, and learning (to live) together.

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