

Teachers' adventures and misadventures during the pandemic in Portugal

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ABSTRACT – Teachers' adventures and misadventures during the pandemic in Portugal^I. The pandemic called for immediate adaptations in school work, the repercussions of which are not yet fully understood. This paper explores the effects of lockdown on teachers' ways of working, considering the intensive use of digital technologies and professional learning opportunities during this period. Data from a questionnaire completed by primary and secondary school teachers between July and September 2020 is used. Professional learning is identified as inseparable from changes in pedagogical and teaching dynamics. The adaptation to and adoption of new practices by teachers were found to vary according to gender, qualifications, level of education taught and length of service, among other variables.

Keywords: Pandemic. Teachers. Professional Learning. Portugal.

RESUMO – Aventuras e desventuras de professores durante a pandemia em Portugal. A pandemia exigiu adaptações imediatas no trabalho escolar cujas repercussões ainda não são bem conhecidas. No artigo, exploram-se os efeitos do confinamento nos modos de trabalho dos professores, considerando a utilização intensiva das tecnologias digitais e as oportunidades de aprendizagem profissional durante esse período. Recorre-se aos dados de um questionário respondido por professores do ensino básico e secundário entre julho e setembro de 2020. Identificam-se aprendizagens profissionais indissociáveis de mudanças nas dinâmicas pedagógicas e didáticas. Constata-se que a adaptação e adoção de novas práticas pelos professores variou em função do género, das habilitações, do nível de ensino, do tempo de serviço, entre outras variáveis.

Palavras-chave: Pandemia. Professores. Aprendizagem Profissional. Portugal.

Introduction

The unprecedented event of the recent pandemic crisis gave rise to significant adaptations in ways of life and work which need to be investigated so that further knowledge can be acquired about these adaptations. With regard to education, the life and work routines of teachers and students were restructured along with changes made to pedagogical practices in order to ensure the continuity of school work (Chauvel; Delès; Pirone, 2021). These disruptions, notably experienced during the various lockdowns, may contain professional learning opportunities with the potential to reconfigure teachers' roles and practices (Avalos; Flores; Araneda, 2021).

Hence, this paper seeks to deepen the knowledge about the life and work routines disrupted by lockdown and the adaptations in teaching practices and in the pedagogical relationship with students, considering the use of technologies during the first lockdown and gathering evidence on professional learning opportunities. To this end, both teachers' assessments and their perceptions of the constraints and limitations in this unprecedented context are explored. Overall, it may be said that a different horizon for teaching, with recourse to technologies, may have emerged from the teachers' experiences in the pandemic (Avalos; Flores; Araneda, 2021), although it remains to be seen whether this will lead to an effective and long-lasting reconfiguration of pedagogical practices and ways of living and working.

The analysis focuses on the perceptions of Portuguese teachers during the first general lockdown in Portugal (between March and August 2020), based on the results of a questionnaire survey completed by almost 4000 teachers in primary and secondary education. It should be noted that in Portugal, all schools closed on 16 March 2020 when "emergency remote teaching" was implemented, which led to an intensification of the use of the Moodle teaching support platform and intensive use of other complementary systems, particularly Google Meet, Classroom Teams, Skype and Zoom. As early as 27 March 2020, the Ministry of Education released a document containing guiding principles for the necessary teaching adaptations in the lockdown context. Another government initiative was the broadcast of educational content on television from 20 April 2020, which continued into the following school year (between October 2020 and July 2021). From the beginning of the first lockdown, the government, on a national scale, and schools, at a local level, sought to identify the students without access to IT and technological equipment and to address these deficits rapidly across the country.

In order to explore the ways teachers worked during the pandemic, the paper first revisits a number of studies (national and international) on the professional development of teachers in its multiple forms, highlighting the research conducted during the pandemic period. Secondly, the research methodology is presented, contextualising the empirical study carried out in Portugal. The last part of the pa-

per is dedicated to a discussion of the empirical data, taking the central questions that guided this research as its reference.

Being and learning to be a teacher during the pandemic

The pandemic crisis brought huge challenges to teachers in their life and work routines, with profound implications for the reorganisation of their pedagogical practices. The intensified use of a range of technologies (teaching support platforms, television, videoconferencing systems, etc.) is central to these changes, and has shed light on the fact that the question of introducing technologies into education goes far beyond issues related to connectivity or access to computer equipment.

The possibility of access to computer equipment and an internet connection was an immediate concern at the onset of the pandemic in several countries. Research conducted in Brazil highlights the difficulties of access to technologies that is particularly pronounced in the public network compared to the private network (Cipriani; Moreira, 2021), but also emphasises challenges related to the link between technologies and teaching strategies, teaching practices and students' digital literacy (Schiaveto; Schmnade, 2021). In international terms, the pandemic contributed to reinforcing the perspective that technologies are not mere tools in education and that the promotion of equal opportunities involves not only access conditions, but also conditions for effective educational success, thus posing challenges in terms of justice and equity beyond the availability of computer resources and equipment (Birgin; Ferrante, 2021).

It is anticipated that the increased use of technology may lead to changes in pedagogical practices that both enhance the role of teachers and enable students to play a more active role in the teaching and learning process. As stated by Hargreaves (2021), lockdowns have shown that while much of student learning can occur without teachers, there is also a significant part that is dependent on teaching. Therefore, the interruption of school routines imposed by the constraints of the COVID-19 pandemic will have generated losses in student learning, leading several national governments to implement recovery plans. In fact, in the initial phase of the pandemic (Oliveira; Gomes; Barcelos, 2020), evidence suggested that learning losses may vary according to the levels of education and subjects, as well as being more pronounced among students from more disadvantaged socio-economic groups.

The intensification of the use of technologies to ensure pedagogical continuity during lockdowns, the adaptations to teaching practices during these periods and the return to face-to-face teaching with a focus on recovering students' learning are potentially experiences that instigate professional learning. However, it is crucial that teachers' self-taught use of technologies is complemented by other training experiences that focus not only on technical and instrumental features but also on their implications for the reconfiguration of

teaching strategies. Several studies in various countries have explored issues related to teachers' professional development during the pandemic.

In fact, although teachers experienced emergency remote teaching as a pressure, it is associated with learning opportunities, as regards both educational scenarios using other tools and pedagogical work strategies, and personal factors and relational issues with students, families and colleagues, as concluded by research analysing the situation experienced in Chile and Portugal (Avalos; Flores; Araneda, 2021). The convergent findings of a survey conducted in France show that despite the constraints experienced during the 2020 lockdown, teachers claim to have got to know students and their families better and to have deepened their understanding of how social inequalities affect schooling; these teachers also claim to have developed skills in communicating with families, geared better towards supporting their children's learning (Pirone, 2021).

In Portugal, a study with primary and secondary school teachers suggests that the need to adapt, discover, experiment and use new digital technologies and methodological strategies during the pandemic crisis may have positive outcomes, as teachers value the development of other ways of relating to students, collaborating with colleagues and communicating with coordinators and heads in school organisations (Correia; Henriques; Trindade, 2021). Another survey conducted in Portugal, involving pre-school, primary and secondary school teachers, presents convergent results indicating that the high workload in the transition to remote teaching did not prevent teachers from expressing satisfaction with the quality of teaching adaptations and also with relationships with students, families and other teachers, stating that the lockdown period had enhanced these interactions (Torres et al., 2021).

Indeed, over the course of teachers' learning processes during the pandemic, communication with colleagues and collaborative processes among teachers appear to have become a very important context for informal learning, which has key effects on the quality of teaching as the intra-school factor that most affects student learning (Hargreaves, 2021). In parallel, training and various types of courses enriched these teachers' learning, in this case in both non-formal and formal contexts, however their existence was dependent on the initiative of schools and/or national authorities to offer these training opportunities. Yet undoubtedly there was still room for teachers' professional development during the pandemic, as at other times, in a multiplicity of spaces and times throughout and across their lives (Alves, 2020), shaping their individual experience in the transition to remote teaching and establishing a broader professional community.

Despite acknowledging that the pandemic opened up opportunities for teachers to learn professionally, a reflection on the most favourable conditions for such learning is still necessary. First and foremost, it is important to emphasise that enhancing collaborative

work dynamics with formative effects requires preparation and an initial stage of dialogue to apprehend the beliefs and theories implicit in teachers' work in order to subsequently develop dynamics based on trust and recognition among peers. (Bodewig; Paniagua, 2021). In this regard, it is crucial that time is set aside during working hours for this type of activity, and that institutional logics in schools do not focus on administrative and supervisory measures or foster a work culture based on control and the evaluation of individual performance. The formation of learning communities and study groups should be promoted, as well as stimulating peer observation experiences, mentoring and monitoring centred around dialogue that allow pedagogical knowledge to be built and pedagogical practices to be transformed, where sharing takes priority over adherence to an inflexible and hierarchical school model.

The pandemic crisis reinforced both the idea that one can learn without being taught and the importance of teachers as teaching professionals, enhancing the teaching profession and its expert knowledge (Hargreaves, 2021). In a previous study (Authors, in press), evidence was collected on changes in the work of schools, mainly guided by Portuguese teachers' concern with fostering the educational inclusion of all students and mitigating the social inequalities brought to light and exacerbated by the pandemic. Also, in Spain, the importance of teachers' work in schools to ensure learning times and opportunities for students from disadvantaged socio-economic backgrounds was emphasised, as it was anticipated that middle class children and young people would be able to maintain quality educational standards during the pandemic (Bonal; Gonzáles, 2020).

In fact, the inequalities among students across social classes in terms of time dedicated to learning and the quality of educational activities outside school hours were also existent prior to the pandemic and are likely to have intensified during this critical period. While conditions at home vary depending on a number of factors including physical space, technological equipment, parental involvement and the monitoring of school life, the absence of school increases the importance of families in young peoples' learning and families with lower levels of schooling have fewer resources and knowledge to help students with their school work (Torres;Alves,2024).

In short, teachers' work during the pandemic called for significant adaptations which, on the one hand, reveal pre-existing educational orientations and ways of teaching, while on the other, may have repercussions for teaching strategies and ways of working in the future. The intensification of the use of technologies in education is a key element in these adaptations, especially during the first lockdown, reinforcing the idea that they are not merely a neutral tool. Alternatively, it is anticipated that the use of technologies has the potential to reconfigure pedagogical practices and teaching strategies, with implications for teachers' work that need to be understood in depth. Moreover, these adaptations also reveal opportunities for professional learning, even in a context of significant constraints and limitations in

teachers' life routines due to the pandemic crisis. Therefore, adventures and misadventures were intertwined in teachers' lives and work experiences during the pandemic.

Against this background, the data discussed in this paper contribute to answering two main questions: What changes in terms of the use of technologies in pedagogical practices did Portuguese teachers report during the first lockdown? How do these teachers perceive the learning opportunities that accompanied the adaptations in their professional practices during this period? The aim is to deepen the knowledge about changes in teaching practices and discuss the extent to which they contribute to the quality of teaching and learning understood from the perspective of promoting equal opportunities in education.

Methodological procedures of the survey on Portuguese teachers

The data presented and discussed in this paper are the result of a questionnaire survey completed online via Google Forms, between July and September 2020, by Portuguese primary and secondary school teachers. These teachers responded towards the end of the school year, at the time of the first general lockdown, when they had already been working remotely with students since mid-March. In Portugal, there were only two exceptions to the remote teaching regime in force between March and August 2020: teachers of national examination subjects in secondary education who taught in-house from the second fortnight of May; and a very small number of teachers working in schools that remained partially open to accommodate the students of health and security professionals or children and young people in vulnerable situations.

The teacher questionnaire is part of an international project entitled *School at Home in pandemic times*, coordinated by French colleagues Filippo Pirone and Romain Delès from the University of Bordeaux, and was administered after collecting responses to another questionnaire survey for parents and guardians². Thus, taking advantage of the connections previously established to publicise the questionnaire to students' families approximately one month earlier, the administrative boards of Portuguese state and private primary and secondary school clusters received a request for their teachers to complete the questionnaire. The heads of state schools and clusters were asked, by email, to collaborate in disseminating the form to teachers, while in the case of state schools this request was addressed to the *Direção da Associação de Estabelecimentos de Ensino Privados e Cooperativos* [Directorate of the Private and Cooperative Educational Establishment Association], which accepted to disseminate it among the respective heads. In addition, a request was made on the form itself asking teachers to forward the link to other colleagues for its completion, fostering a "snowball" effect that also contributed to the final sample of 3983 responses.

The questionnaire begins with a set of questions to characterise the respondents on a personal and professional level (age, gender, professional status, academic qualifications, among others), as well as the school clusters in which they work/worked (location, integration in the TEIP³ programme, school levels, etc.). Additionally, further questions are included that contribute to characterising teachers' perceptions of the goals of school education and pedagogical work strategies in order to explore potential changes resulting from the lockdown experience by questioning respondents about practices and perceptions before and during lockdown. The responses were imported from the google form, and an excel database was created for the subsequent statistical analysis using the IBM SPSS statistics software where frequencies were calculated, variables were cross-referenced and tests of statistical association between variables were performed.

A total number of almost 4000 responses is significant, corresponding to around 3% of the total number of primary and secondary school teachers in 2019/20 (130430 according to Ministry of Education data⁴). However, it is still important to clarify the extent to which the profile of the respondents corresponds to that of primary and secondary school teachers at a national level, according to the data provided by the Ministry of Education.

As far as age is concerned, the average age of the respondents was 50.49 years, very close to that observed at a national level (48 years in basic education, 51 years in the 2nd cycle and 50 years in the 3rd cycle and secondary education). The weight of women in the sample of respondents was 79.8%, which is only slightly higher than the 75.5% of female primary and secondary school teachers according to national data. However, few teachers working in private schools (1.9 per cent of the sample, while they represent around 10 per cent at national level) responded to the questionnaire. The highest academic qualification held by most of the respondents was a licentiate degree (69.4%), and this group is larger at the national level (80.5%), suggesting a more expressive presence of teachers holding postgraduate, master's and even doctoral degrees among the respondents. In short, since occasional mismatches between the profile of the respondents and that of teachers at a national level were observed, some caution should be taken in generalizing the results.

In order to characterise the sample of respondents, it should be noted that 72% had been teachers for at least 21 years and their distribution across the various teaching cycles was relatively balanced. 13.8% worked in the profession under temporary contracts, which means that the vast majority of the remaining teachers had more stable contracts (either in a pedagogical zone (QZP), school cluster/non-clustered school or as a permanent staff member in a private school). In terms of territorial distribution, 32.6% taught in schools located in a medium-sized city (20,000 to 100,000 inhabitants) and 31.3% in cities with fewer than 20,000 inhabitants.

Use of technologies before and after the pandemic: what are the changes in teachers' pedagogical practices?

According to the results of TALIS 2018⁵, in the period prior to the pandemic, Portuguese secondary school teachers tended to be more open to the possibility of students using technology in classes and projects than other teachers in OECD countries, even though difficulties in accessing the internet and teaching support platforms were greater in Portuguese schools. This trend is reflected in the results of the questionnaire survey administered to teachers, which point to the frequent (54.7%) and very frequent (22.2%) use of digital devices prior to the pandemic, and particularly intensified use during lockdown - 92.9% of teachers began using them very frequently (see Table 1).

Table 1 – Use of digital devices before and after lockdown (%)

	Very frequent	Frequent	Occasional	Not frequent at all
Before lockdown	22.2	54.7	21.2	1.9
During lockdown	92.9	6.4	0.6	0.1

Source: Questionnaire survey *School at home: the point of view of teachers*, administered to teachers between July and September 2020 (n= 3 983).

A more in-depth analysis of the use of digital devices prior to the pandemic reveals a number of particularities in the professional profiles most likely to use digital tools. The cross-referencing of the variables presenting a significant chi-square association show that the use of technology is more frequent among male teachers, those at the beginning of their career (6-10 years of service), those with permanent (private education) or indefinite (state education) contracts, those with master's and doctoral degrees, those with teaching experience in TEIP and secondary school teachers (see Table 2).

Table 2 – Use of digital devices before lockdown (%)

Significant chi-square associations				
	Very frequent	Frequent	Occasional	Not frequent at all
Gender				
Woman	20.9	56.2	21.3	1.5
Man	27.3	48.6	21.0	3.1
χ^2 (3, N=3 983) = 27,228, $p < .001$				
Years of service				
up to 5 years	21.7	49.3	27.5	1.4
6-10 years	28.6	50.5	20.9	0.0
11-20 years	24.9	55.0	18.4	1.6
21-30 years	22.5	55.6	19.8	2.1
Over 30 years	19.4	53.8	24.9	1.9
χ^2 (12, N=3 983) = 27,873, $p < .006$				
Professional situation				
Contract				1.5
QZP	25.0	53.4	20.2	1.9
QA (clustered)/QENA (non-clustered)	22.6	57.0	18.4	2.0
Permanent	21.0	55.1	21.9	0.8
Another situation	34.1	40.5	24.6	4.2
Another situation	12.5	45.8	37.5	
χ^2 (12, N=3 983) = 27,771, $p < .006$				
Academic qualifications				
Bachelor's degree	25.9	44.4	24.7	4.9
Licentiate	20.3	55.9	22.1	1.7
Post-graduation	23.4	55.6	18.0	3.0
Master's	27.4	50.6	20.5	1.4
PhD	35.3	54.9	9.8	0.0
Other	22.2	44.4	33.3	0.0
χ^2 (15, N=3 983) = 39.351, $p < .001$				
Teaching in TEIP				
Yes	24.1	56.3	17.7	1.9
No	21.5	54.0	22.7	1.8
χ^2 (3, N=3 983) = 12.616, $p < .006$				
Teaching cycle				
1 st cycle BE (basic education)	19.5	54.5	24.0	2.0
2 nd cycle BE	20.3	59.4	18.1	2.2
3 rd cycle BE	20.3	57.4	20.9	1.4
Secondary	28.0	48.8	21.2	2.0
χ^2 (9, N=3 983) = 42.611, $p < .001$				

Source: Questionnaire survey *School at home: the point of view of teachers*, administered to teachers between July and September 2020 (n= 3 983).

It should also be noted that most teachers had already manifested some openness to pedagogical innovation during the pre-pandemic period, whether in the implementation of "flipped classes" (17% frequently and 65% sometimes) or in the creation of pedagogical differentiation strategies (74% frequently and 25.6% sometimes), both of which are more associated with female teachers, the 1st cycle, TEIP clusters and state schools. In the same vein, when asked about their degree of mobilisation for pedagogical innovation issues, 57.3% of

teachers reported feeling fully mobilised and 40.9% claimed to feel relatively mobilised. There is also a pattern here, albeit with some variations: the most mobilised teachers are male, early-career, contract teachers with experience in teaching in TEIP clusters and holding higher academic qualifications (see Table 3).

Table 3 – Mobilisation for pedagogical innovation issues (%)

Significant chi-square associations			
	Yes, totally	Yes, relatively	No
Gender			
Woman	56.2	42.1	1.7
Man	61.6	36.3	2.1
$\chi^2(2, N=3\ 983) = 9,328, p<,005$			
Years of service			
up to 5 years	66.7	31.9	1.4
6-10 years	69.2	29.7	1.1
11-20 years	62.2	36.1	1.8
21-30 years	59.1	40.0	0.9
Over 30 years	49.8	47.1	0.4
$\chi^2(12, N=3\ 983) = 60,879, p<,005$			
Professional situation			
Contract	65.9	32.4	1.6
QZP	56.9	41.5	1.7
QA / QENA	56.0	42.1	1.9
Permanent	51.6	47.6	0.8
Another situation	33.3	62.5	4.2
$\chi^2(8, N=3\ 983) = 27,432, p<,001$			
Academic qualifications			
Bachelor's degree	45.7	51.9	2.5
Licentiate	53.6	44.5	1.9
Post-graduation	62.8	35.9	1.3
Master's	67.7	30.6	1.7
PhD	76.5	23.5	0.0
Other	44.4	55.6	0.0
$\chi^2(10, N=3\ 983) = 65,394, p<,001$			
Teaching in TEIP			
Yes	61.7	36.6	1.6
No	55.4	42.7	1.8
$\chi^2(2, N=3\ 983) = 13,264, p<,001$			

Source: Questionnaire survey *School at home: the point of view of teachers*, administered to teachers between July and September 2020 (n= 3 983).

During lockdown not only an intensification of the use of technologies was observed but also their diversification, although this does not necessarily mean a change in the teaching and learning model. The vast majority of teachers used different digital resources: 96.7% reported using pedagogical platforms, 92% gave their lessons by videoconference (67.4% once or twice a week; 31.9% three to five times a week), 86.1% mobilised internet resources recommended by schools and 75.1% used alternative digital tools to those recommended by schools or the Ministry of Education (see Table 4). Interestingly, the use of digital technologies during lockdown is only statistically re-

lated to the level of education (more frequent in the 3rd cycle), which shows the weight of the remote learning imposition as the only possible alternative, regardless of previously favoured pedagogical preferences or methodologies.

Table 4 – Type of technological resources used during lockdown (%)

Type of technological resources	Yes	No
Digital pedagogical platforms	96.7	3.3
Internet resources recommended by schools	86.1	13.9
Alternative digital tools to those recommended by schools or by the ME	75.1	24.9
Virtual lessons (videoconference / synchronous lessons)	92.8	7.2

Source: Questionnaire survey *School at home: the point of view of teachers*, administered to teachers between July and September 2020 (n= 3 983).

Despite the widespread use of technologies in the pandemic period, teachers evaluated the resources made available for emergency remote teaching moderately: 48.2% considered the equipment at their disposal to be adequate for pedagogical continuity in distance learning, but encountered some difficulties, and 72.4% considered that the platforms and digital resources recommended by the Ministry of Education (ME) were relatively sufficient and/or adequate (see Table 5).

Table 5 – Assessment of the resources at their disposal during lockdown (%)

Significant chi-square associations						
	%	Gender	Qualifications	Teaching level	Type of school	TEIP experience
Suitability of equipment						
Yes, totally suitable	34.4	χ^2 (2, N=3 983) = 13,583, $p < ,001$	χ^2 (10, N=3 983) = 27,950, $p < ,002$	χ^2 (6, N=3 983) = 45,486, $p < ,001$		
Yes, but I have some difficulties	48.2					
No, I feel that I do not have suitable equipment	17.4					
Digital platforms and resources recommended by the ME						
Totally sufficient and/or suitable	16.5	χ^2 (2, N=3 983) = 27,887, $p < ,001$		χ^2 (6, N=3 983) = 15,863, $p < ,015$	χ^2 (6, N=3 983) = 16,465, $p < ,011$	χ^2 (2, N=3 983) = 14,241, $p < ,001$
Relatively sufficient and/or suitable	72.4					
Insufficient and/or unsuitable	11.1					

Source: Questionnaire survey *School at home: the point of view of teachers*, administered to teachers between July and September 2020 (n= 3 983).

This assessment appears to be in line with the profile of teachers who were more open to the use of digital technologies prior to the

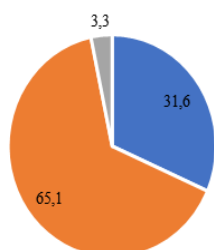
pandemic. In fact, male teaching in secondary school with the highest qualifications (master's and PhDs) were the ones who evaluated the suitability of the equipment at their disposal (computer, tablet, internet connection) more positively for pedagogical continuity in distance learning, which may reflect their previous preparation in the use of these resources. In turn, regarding the digital platforms and other resources recommended by the Ministry of Education during lockdown, the female teachers appeared to be more satisfied, as well as those teaching in school clusters and at secondary school level, while the teachers with teaching experience in TEIP clusters expressed less satisfaction (see Table 5).

The intense use of digital technologies over an extended period of time is unlikely to have automatically changed the teaching-learning model, but it may have triggered significant learning from an unprecedented virtual and immersive experience that brought previously naturalised educational dimensions to the centre of priorities.

Perceptions regarding learning opportunities: mere digital empowerment or change of the pedagogical model?

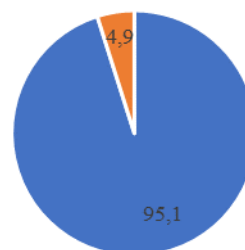
Returning to TALIS 2018 data, before the onset of the pandemic, Portuguese teachers were among those who learned the least about educational technologies in initial or continuing teacher education (47% against 56% average in OECD countries), although they felt more confident than teachers in other countries to support their students in the use of technology (88% against 67% average in OECD countries). However, the results of the teacher questionnaire show that during the pandemic, the use of a wide variety of technological devices provided a rich experience in new professional learning, as recognised by the teachers when they claimed to feel capable of using digital platforms in the context of non-face-to-face teaching (31.6% with no problems and 65.1% expressing the need to improve some features), with 95.1% even considering that their skills in the use of digital media for pedagogical purposes had progressed during the pandemic (see Charts 1 and 2). Digital empowerment is strongly associated with (male) contract teachers and early-career teachers, with more qualifications and teaching in secondary education. In turn, the female teachers emphasised progression in the use of technologies the most, probably due to the fact that before the pandemic they used them less intensively than their male counterparts.

Chart 1 – Ability to use digital platforms in the context of non- face-to-face teaching (%)



- Yes, with no problems
- Yes, despite the need to improve some features
- No, I encounter many difficulties

Chart 2 – Progression in the use of digital skills for pedagogical purposes (%)

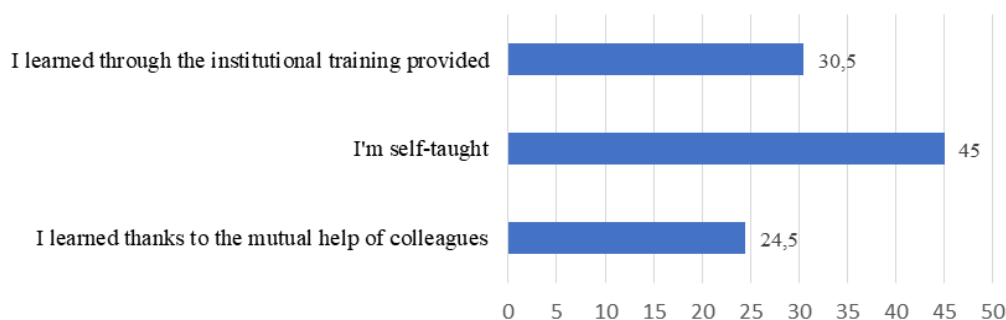


- Yes
- No

Source: Questionnaire survey *School at home: the point of view of teachers*, administered to teachers between July and September 2020 (n= 3 983).

The swift and intensive learning of technologies occurred largely in a self-taught manner and with other colleagues through mutual help strategies (see Chart 3). Only 24.5% of teachers reported having learned through institutional training. The need to overcome the difficulties imposed by the lockdown encouraged self-directed learning strategies as the main resource (45%), and it is to be expected that this self-training process left its mark on teachers' ways of working. Similarly, creating a support network based on mutual help was a solution for 30.5% of teachers, which may have strengthened collaborative work, at least among some groups of teachers.

Chart 3 – Factors that contributed to the mastery of technologies (%)



Source: Questionnaire survey *School at home: the point of view of teachers*, administered to teachers between July and September 2020 (n= 3 983).

By analysing further the strategies developed by teachers to address the technological challenges during lockdown, trends connected to the use of digital technologies prior to the pandemic may be noted: i) female teachers, who were less likely to use technologies before the pandemic, resorted more to the mutual help of colleagues, while male teachers learned more through self-directed learning; ii) self-directed learning was more frequent in contract teachers and early career teachers, while recourse to the mutual help of colleagues increased with teachers' length of service and permanent position in the career; iii) teachers with higher academic qualifications were those who learned more through self-directed learning and less through the mutual help of colleagues; iv) teachers at the initial levels of education (1st and 2nd cycles) were those who used mutual help networks the most, while those teaching at higher levels (3rd cycle and secondary) tended to use self-directed strategies (see Table 6). These scenarios point to differentiated patterns of teachers' work that sociologically question the heterogeneity of the teaching staff and the different ways of relating to the teaching profession. More individualised learning strategies were predominantly mobilised by a specific group of teachers (male, early-career, contract teachers with high qualifications and teaching in the 3rd cycle and secondary education), while the use of support and mutual help networks points to another profile (female teachers at the initial levels of education, with lower qualifications and in their career for longer). Specific training, although not very expressive, was used more by teachers with high academic qualifications.

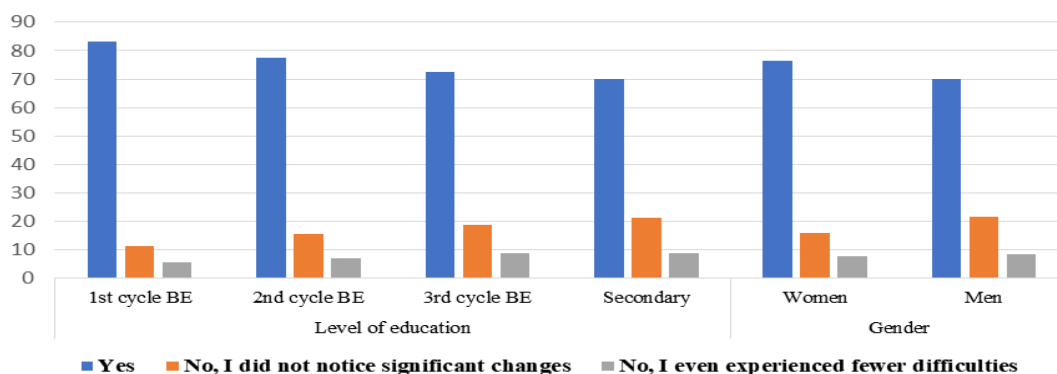
Table 6 – Factors that contributed to progression in the use of digital skills for pedagogical purposes (%)

Significant chi-square associations			
	I learned thanks to the mutual help of colleagues	I'm self-taught	I learned through the institutional training provided
Gender			
Woman	25.2	42.5	32.3
Man	21.6	55.3	23.2
$\chi^2 (2, N=3\ 755) = 40,435, p<,001$			
Years of service			
up to 5 years	24.6	60.7	14.8
6-10 years	23.5	54.1	22.4
11-20 years	24.2	49.8	26.1
21-30 years	25.1	46.9	27.9
Over 30 years	23.9	37.5	38.6
$\chi^2 (8, N=3\ 755) = 67,423, p<,001$			
Professional situation			
Contract	23.2	52.3	24.5
QZP	25.2	47.9	26.9
QA /QENA	24.9	42.6	32.6
Permanent	19.0	44.8	36.2
Another situation	18.2	50.0	31.8
$\chi^2 (8, N=3\ 755) = 26,915, p<,001$			
Academic qualifications			
Bachelor's degree	24.0	37.3	38.7
Licentiate	23.7	43.7	32.6
Post-graduation	26.4	47.0	26.6
Master's	26.5	48.4	25.1
PhD	19.1	70.2	10.6
Other	22.2	11.1	66.7
$\chi^2 (10, N=3\ 755) = 39,324, p<,001$			
Teaching cycle			
1 st cycle BE	22.8	40.9	36.3
2 nd cycle BE	24.7	39.9	35.5
3 rd cycle BE	26.0	45.3	28.7
Secondary	24.1	51.6	24.4
$\chi^2 (6, N=3\ 755) = 48,192, p<,001$			

Source: Questionnaire survey *School at home: the point of view of teachers*, administered to teachers between July and September 2020 (n= 3 983).

There appears to be no doubt that the lockdown period provided intense professional learning to address the emergence of the various unexpected difficulties. These difficulties were expressively emphasised by the majority of teachers (75.3%) and were experienced most by those at the initial levels of education and female teachers, with both groups recording significant associations (see Chart 4).

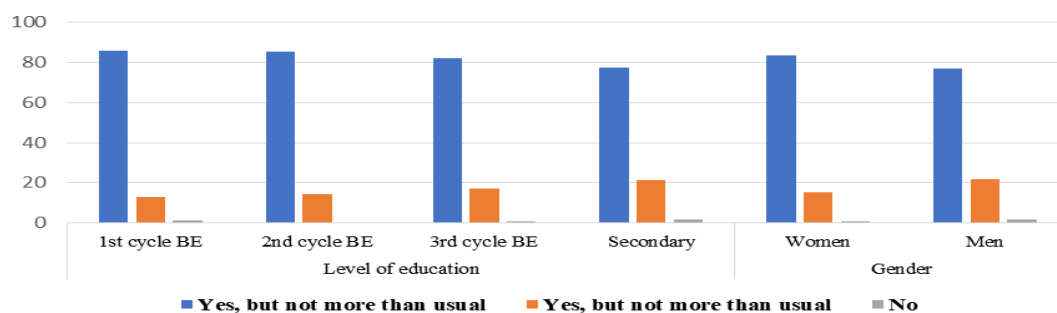
Chart 4 – Professional difficulties during lockdown by teaching level and gender (%)



Note: Significant chi-square associations : level of education - $\chi^2(6, N=3\ 980) = 54,560, p<,001$; gender - $\chi^2(2, N=3\ 980) = 16,253, p<,001$. Source: Questionnaire survey *School at home: the point of view of teachers*, administered to teachers between July and September 2020 (n= 3 983).

Yet to what extent was this self-training process limited merely to digital empowerment? Did the intensive use of technological tools induce changes in the teaching-learning model? When asked about the pedagogical investments made during lockdown, the vast majority of teachers (81.7%) claimed to have invested more professionally than usual, and this trend was even more significant among female teachers ($\chi^2(2, N=3\ 983) = 19.618, p<,001$). On the other hand, the majority of teachers (82.4%) reported having researched teaching and pedagogical resources to facilitate their professional activity and this practice was more pronounced at the initial levels of education and among female teachers (see Chart 5).

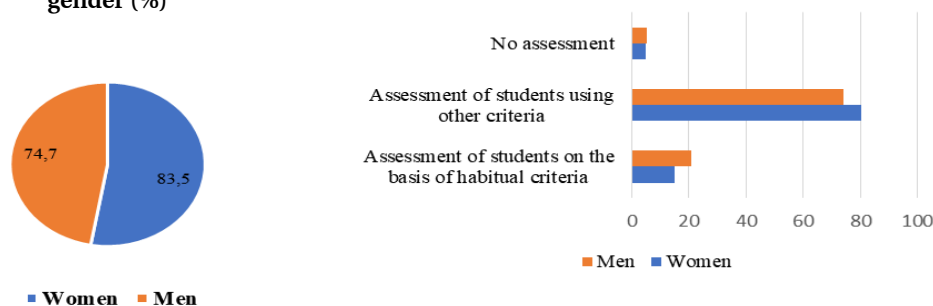
Chart 5 – Research of teaching and pedagogical resources during lockdown, by level of education and gender (%)



Note: Significant chi-square associations: level of education - $\chi^2(6, N=3\ 983) = 35,723, p<,001$; Gender - $\chi^2(2, N=3\ 983) = 23,259, p<,001$. Source: Questionnaire survey *School at home: the point of view of teachers*, administered to teachers between July and September 2020 (n= 3 983).

Other indicators suggest that digital learning may have changed the way teachers work. Indeed, 81.7% of the teachers admitted to having discovered new methods and acquired new teaching habits that will be used when the situation returns to normal. Once again, female teachers appeared to be the most confident about changing teaching-learning methodologies (see Chart 6). Compared to the study of Pirone (2021), whose questionnaire administered to French teachers was similar, this indicator is particularly high and distant from the 29.5% obtained in France for the same question. The introduction of changes in pedagogical dynamics also extended to the assessment model, since the majority of Portuguese teachers (79%) reported having used different criteria to the usual ones, and this change was more pronounced among female teachers (see Chart 7).

Chart 6 – Discovery of new methods and acquisition of new teaching habits, by gender (%) **Chart 7 – Changes in type of assessment, by gender (%)**



Note: Significant chi-square associations: Gender (Chart 6) - $\chi^2(1, N=3\ 983) = 33,704, p < .001$; Gender (Chart 7) - $\chi^2(2, N=3\ 978) = 17,248, p < .001$. Source: Questionnaire survey *School at home: the point of view of teachers*, administered to teachers between July and September 2020 (n= 3 983).

It should also be noted that the learning opportunities are not dissociated from the constraints experienced by teachers during the pandemic period. Indeed, it was the nature of these constraints that largely determined the changes in ways of working. The rapid awareness that lockdown exacerbated social inequalities (a perception shared by 81% of teachers) and that the pedagogical experience of school at home was an "emergency solution, useful in the context of the health crisis, but one that should not be prolonged over time" (74.7% of respondents agreed), will have encouraged teachers to find alternative solutions to minimise the effects of such inequalities. For example, pedagogical differentiation strategies were promoted by the vast majority of teachers (38.5% frequently and 45.4% sometimes), with a higher incidence in the initial levels of education and in TEIP schools.

Even so, the majority of teachers regarded the strategies developed as insufficient to help the students with more difficulties at school (60%) and even less so for students with special educational needs⁶ (56.8%) (see Table 7). The intensification of regular contact and dialogue with students and their families reported in several international surveys and also con-

firmed in this study (Torres; Alves, 2024) most likely gave rise to a deeper understanding of students' unequal circumstances in school education. Returning to Pirone's research (2021) for comparative purposes, Portuguese teachers appear to attach greater importance to preserving students' ties with the school (89.2% in Portugal and 80.1% in France), having underlined more than the French teachers that the main reason for regular contact with families was "to help the student and family organise work at home" (40.5% in Portugal and 27.2% in France).

Table 7 – Support for students with school difficulties and special educational needs (%)

	Students with school difficulties	Students with special educational needs
Yes, I found ways of doing it	22.5	27.2
Yes, I developed some strategies to do it, but they are not sufficient	56.8	60.0
No, it's impossible to support these students in this remote teaching situation	20.7	12.9

Source: Questionnaire survey *School at home: the point of view of teachers*, administered to teachers between July and September 2020 (n= 3 983).

In general terms, the results of the questionnaire administered to teachers point to a scenario of intense learning of digital technologies, with significant effects on the professional sphere of teaching, both in the relational dimensions and in the pedagogical, didactic and assessment fields. However, teachers' perceptions and ways of working during the pandemic appear to be heterogeneous, reflecting the diversity of teaching staff and school organisations themselves. It was possible to identify external (gender, career, academic qualifications) and internal (level of education, professional experience, type of organisation) factors strongly associated with teachers' ways of working, pointing to professional patterns and profiles more and less open to change.

Conclusion

The research reported in this paper unsurprisingly confirms that the first lockdown resulted in an intensification of the use of technologies in teaching practices, as well as their diversification, given the more frequent use of digital platforms and videoconferencing systems. Moreover, the data also point to variations in teachers' use of technology, revealing its higher prevalence in the practices of male, early-career teachers and those with higher academic qualifications. This profile reflects a pre-existing trend of technology use in teaching.

Teachers' adventures during this exceptional period are associated with an openness and mobilisation for change and innovation that appear to have been particularly pronounced in the case of teachers working in TEIP schools. This result converges with the idea that these schools are often a privileged site for the emergence of new practices and pedagogical and organisational work processes with auspicious results in promoting academic success. (Costa; Almeida, 2022).

This research also reinforces the idea that teachers acquired significant professional learning during the pandemic, as stated by several authors (Correia; Henriques; Trindade, 2021; Torres et al., 2021; Hargreaves, 2021). Most admitted to having discovered new methods and acquired new teaching habits that will be mobilised in the post-pandemic period, which is more noticeable among Portuguese teachers than among their French counterparts (Pirone, 2021). In terms of digital use skills, the progression will have been particularly marked in female teachers, who also appeared to be more confident about changing teaching-learning methodologies after the pandemic.

The research also suggests that self-directed learning and mutual support emerged as key learning processes. The more individualised learning strategies were predominantly mobilised by male, early-career, contract teachers with high qualifications and teaching at 3rd cycle and secondary levels, while the use of mutual support networks was more frequent among female teachers, teaching at the initial levels of education, with lower qualifications and in their careers for longer. The use of formal and non-formal training, while not very expressive, was more present among teachers with high academic qualifications. These results suggest that the experience of the pandemic may have contributed to reinforcing informal learning dynamics and collaborative logics in teachers' ways of working, in line with the hypotheses advanced by other authors (Hargreaves, 2021; Bodewig; Paniagua, 2021).

In this adventurous context of teachers' professional development in pandemic times, the main misfortunes reported by teachers appear to be associated with the scarcity of opportunities to participate in training programmes promoted by the schools themselves, by the Ministry of Education and/or by other entities. These programmes were only accessible to a minority, among whom most were teachers with high academic qualifications. Moreover, the surveyed teachers gave only a moderately positive assessment of the resources at their disposal in the first lockdown, which they portray as a period with numerous difficulties experienced to a greater extent by female teachers and teachers of the lower levels of education.

Overall, the research corroborates the hypothesis that a different horizon for teaching with recourse to technologies may have emerged from the experiences of teachers during the pandemic (Avalos; Flores; Araneda, 2021), but whether this will lead to an effective and long-lasting reconfiguration of pedagogical practices and ways of working is a topic for future research. Nevertheless, the relevance of the development of new teaching methods and habits and the great importance attached to maintaining ties with students during the first lockdown should be highlighted as striking characteristics among Portuguese teachers compared to those who were surveyed in France through an identical questionnaire in the same time period (Pirone, 2021).

From a methodological point of view, it is important to highlight that data collection through online platforms resulted in an overrepresentation of respondents with higher academic qualifica-

tions in this study, as in others (Authors, in press), which should be considered when generalizing the conclusions. In addition, the absence of students' perspective on the school in pandemic times is a gap in the research conducted on the consequences of school closures during the pandemic crisis. (Muchacho; Vilhena; Valadas, 2021). In fact, this circumstance prevents the confrontation between the perspectives of teachers and those of students, which would be extremely enriching to deepen knowledge and understanding about adaptations and changes in school life and work routines caused by the pandemic.

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- ² Both questionnaire surveys were designed by the Portuguese team (Bruno Dionísio, Leonor Lima Torres and Mariana Gaio Alves), using the model administered in France as a reference. The results of the questionnaire administered to the parents and guardians are published in *L'Ecole durant la pandémie: quels effets dans les différents systèmes éducatifs ?*, under the coordination of Romain Délès, Inés Dussel, Elisabeth Hultqvist and Filippo Pirone, in the Journal *Éducation Comparée*, 26, volume 2.
- ³ The TEIP programme - *Territórios Educativos de Intervenção Prioritária* [Programme for Priority Intervention Educational Areas] - is a Portuguese government initiative that currently covers 146 schools in economically and socially disadvantaged areas. These areas are characterised by poverty and social exclusion, with a prevalence of violence, indiscipline, school dropout and educational underachievement. The TEIP programme was launched in 1996, and the number of participating schools has progressively increased. It provides additional resources to schools so that they are able to develop specific action and intervention programmes.
- ⁴ See *Perfil do Docente 2019/2020* [Teacher Profile 2019/2020] published by the *Direção-Geral de Estatísticas da Educação e Ciência* [Directorate-General for Education and Science Statistics] (DGEEC) – Ministry of Education in September 2021.
- ⁵ The TALIS is an OCDE survey asking teachers and school heads about their working conditions and professional learning. In 2018, 260000 teachers in 15000 schools across 48 countries, including Portugal, responded to the survey.
- ⁶ The expression “special educational needs” is used as it corresponds to the direct translation of “necessidades educativas especiais” adopted in the questions answered by the teachers. However, in certain political and academic contexts it is more often used “specific needs” or “students in special education”.

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