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ONLINE EDUCATION FOR ALL? IMPACT OF COVID-19 PANDEMIC ON TEACHERS' PROFESSIONAL DIGITAL COMPETENCE DEVELOPMENT IN THE CONTEXT OF MUNICIPAL ADULT EDUCATION FOR MIGRANTS

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Research Paper

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Abstract

The COVID-19 pandemic has disproportionately impacted the education of disadvantaged groups, relegating already marginalized people. It required their teachers to rapidly develop digital competencies to ensure that their students could overcome potential challenges and succeed in their education. Thus, the purpose of this study is to explore the impact of the pandemic on the development of professional digital competence of teachers working with adult migrant learners.

By analyzing responses from questionnaires, a workshop and interviews with Swedish Municipal Adult Education (MAE) teachers working in migrant-dense areas in Sweden, we identify notions and perspectives of Teachers' Professional Digital Competence (TPDC). We explore the challenges they encountered and the skills they deemed essential for managing them. The findings show the necessity of teachers considering learners' study conditions, development of digital literacy skills, and cultural awareness to ensure inclusive online education for migrant learners.

Keywords: COVID-19, Professional Digital Competence, Migrants, Teachers.

1 Introduction

The COVID-19 pandemic has had a tremendous impact on the educational landscape all over the world, resulting in the largest disruption of education systems in human history (Pokhrel and Chhetri 2021, Tang 2023). Digitalization, with technology as an integral part of our lives, enabled life to continue despite physical lockdowns and social distancing measures. As working from home and online education became the main modes of operation in many countries (McFadden et al. 2021, Muthuprasad et al. 2021), both teachers and learners appreciated the flexibility and convenience of online education and remote work, the availability of video materials on learning platforms (Yuda Handaya et al. 2021), and ample opportunities for acquiring digital skills (Myyry et al. 2022).

On the other hand, the abrupt switch to emergency remote teaching (Hodges and Fowler 2020) considerably increased the workload for teachers and students. Teachers were challenged by managing emergent transformations of learning environments (Lima et al. 2020) and by a lack of time for planning in period of panic, survival, and grit (Nørgård 2021). There are reports on limited social interaction between teachers and learners (Karalis and Raikou 2020, Mishra et al. 2020), technical difficulties with online tools (Hebebci et al. 2020), the high cost of online connection (Shonfeld et al. 2020) which some learners could not afford (Adnan and Anwar 2020, Moralista and Oducado 2020), and a lack of engagement and motivation in learners (Aristovnik et al. 2020). Research points to emergency remote teaching having a disproportionate impact on the education of disadvantaged groups (Cerna et al. 2020, Gan and Sun 2021, Barnová et al. 2021, Tsolou et al. 2021, Bilgeri 2023). Economic hurdles that resulted in limited or no access to the Internet and a lack of digital devices (Kapasia et al. 2020, Bond et al. 2021) and poor living conditions which impacted the availability of suitable study spaces (Azevedo et al. 2021) had bearing on the quality of online education for these groups, exacerbating their already unequal position, marginalization, and vulnerability (Catalano et al. 2021). One such group is migrants, who often lack social networks in the host society (Stevens 2016), have limited language skills (Hou and Beiser 2006), and suffer poor mental health as a consequence of losses and trauma they faced fleeing their home countries (Bäärnhielm et al. 2014).

Migrant integration, defined as an acculturation strategy when migrants make a decision to interact with the host society members while maintaining their original culture and learning the host society culture at the same time (Berry 1997), is essential for preventing prejudice, discrimination, and creating an inclusive society where people, whatever their background, live, work, learn and socialize together, based on shared rights, opportunities and responsibilities (Ndofor-Tah et al. 2019). Countries accepting migrants commonly provide different kinds of integration courses, supporting migrants in their integration. Language courses and societal learning courses, for example, BAMF (the Federal Office for Migration and Refugees) orientation course in Germany, SFI (Swedish for Immigrants) course in Sweden, and IOM (The International Organization for Migration) Training and Integration in Norway.

Few studies indicate challenges relating to the disruption of integration courses for migrants during the pandemic (McMullin 2021), such as the increased social isolation of migrant learners, hurdles in following online courses due to a lack of digital literacy skills (Falkenhain et al. 2021, Mupenzi et al. 2020), and a shortage of digital devices (Barakos and Plöger 2020). At this moment, research on how teachers working with adult migrants handled these challenges in practice, and how the pandemic contributed to developing their professional digital skills is scarce.

As online education and digital technologies are rapidly becoming an integral part of migrant adult education (and of education in general), it necessitates identifying the digital competence that teachers need for assuring the quality of online education for migrant learners. This is where the authors of this paper seek to contribute, by exploring the experiences of teachers working with adult migrants during the pandemic. They also seek to explore teachers' perceptions of the impact of these experiences on the development of their professional digital competence. To this end, the study addresses the following research question:

How have the experiences from the pandemic contributed to the development of professional digital competence of teachers of adult education for migrants?

The remainder of the paper is structured as follows. The next section provides a literature review and sets the research within the current literature on migrant education during the pandemic, followed by a section introducing the theoretical lens for digital competence. Then, an overview of the methods for the study is provided, and the results of the study are presented. The final three sections of the paper consist of the discussion, concluding remarks and limitations of the study.

2   Previous research

2.1   Migrant education during the COVID-19 pandemic

In the education sector, the COVID-19 pandemic brought to light the lack of remote teaching experience and consequently an urgent need to develop the professional digital competence of teaching staff. It is also apparent that online education, though seemingly accessible to everyone, especially in developed and highly digitalized countries, can be more or less accessible depending on learners' socioeconomic status (Brown et al. 2016).

Turning specifically to migrants, research indicates that online education in the format of emergency remote teaching during the pandemic was perceived as cumbersome and often unsuccessful (Hodges and Fowler 2020, Barker 2021). Difficulties with transitioning to an online mode of learning (Kamisli and Akinlar), accessing and managing online tools (Sugarman and Lazarín 2020), inadequate digital literacy skills (Mahamud Magan et al. 2022) as well as problems with understanding instructions due to a lack of language competence (Popyk 2021) are some of the challenges experienced by migrant learners.

Limiting physical presence and in-person gathering in schools which are an important place for socialization is also reported as a considerable drawback of emergency remote teaching practices, and it increased the marginalization of migrant learners (Popyk 2021, Mudwari et al. 2021, Loganathan et al. 2021). In general, a lack of social closeness between learners is negative for students' well-being, and especially for students from disadvantaged groups, such as migrants, who often experience more loneliness and isolation than non-vulnerable groups (Primdahl et al. 2021, Barker 2021).

Individuals with low socioeconomic status and limited living space experienced significantly more pressure during the pandemic compared to other groups (Ravens-Sieberer et al. 2022). The unavailability of a functional home environment and personal space to conduct schoolwork necessary for online learning negatively influenced their study performance (Ergin 2020, Mahamud Magan et al. 2022, Loganathan et al. 2021). Furthermore, familial responsibilities also often conflicted with undertaking study, pressuring especially female students to prioritize family duties over education (Mahamud Magan et al. 2022). Finally, as some refugees before the pandemic could get psychological support in relation to their studies, this opportunity was suspended or changed to online support, which was perceived as less successful (Ergin 2020, Primdahl et al. 2021).

2.2   Teachers' professional digital competence in online education

Today, technology-enhanced teaching offers opportunities to provide more varied, collaborative, and individualized learning (Harper and Milman 2016, Bergdahl and Gyllander Torkildsen 2022). Teachers can present materials using combinations of modes and media (Sofkova Hashemi 2022, Svärdemo Åberg and Åkerfeldt 2017), designing synchronous or asynchronous tasks and providing virtual and simulated learning environments (Clark et al. 2016). Network technology provides possibilities for teachers and students to interact in geographically distant areas, collaborate, and co-construct joint activities and tasks (Jeong et al. 2016). In light of this, technology has enabled a transition towards more open, multimodal, networked, and student-active teaching, where students can work independently and co-creatively (Binkley et al. 2012).

Though some studies report migrant learners relating their negative experiences of online education to their teachers' inadequate/insufficient training, digital competence, and skills in conducting online education (Bond et al. 2021, Sugarman and Lazarín 2020, König et al. 2020), studies that look closer at which competences in online education are essential for managing online classrooms involving migrant learners during the pandemic are scarce. For example, in their systematic review Bond et al. (2021) identified only a handful of studies exploring the conditions for online learning for vulnerable learners and migrant populations. They also identified that the adoption of digital resources differed

internationally, with low-income countries turning to mobile applications to handle the lack of computers to a much higher degree, than in high- or upper-middle-income countries.

Definitions of teachers' professional digital competence vary in integrating technical skills with didactical/pedagogical application, professional development and the ability to develop the digital competencies of learners (Esteve-Mon et al. 2020). The policy-driven European Framework for the Digital Competence of Educators (Redecker 2017) combines educators' pedagogical competence and learners' digital competence with professional engagement (i.e., communication and collaboration with colleagues, administration, competence development, etc). The well-known research-evident Technological, Pedagogical, and Content Knowledge (TPACK) framework (Mishra and Koehler 2006) integrates these three knowledge areas. However, technological, pedagogical, and content knowledge represents only a part of the knowledge and skills an educator needs in their profession.

Developed in parallel with TPACK, Educational Data Literacy (EDL)(Mandinach and Gummer 2013, Means et al. 2011, Prado and Marzal 2013) focuses on the treatment of data, such as the ability to locate, gather, evaluate, understand, critique, interpret, analyze, apply, use, and respond to data at different levels of the educational organization to improve education and learning. In addition to these frameworks, aimed at providing a means to assess digital literacy in education in general, several researchers have identified that online educators display additional digital competencies related to the ability to design engaging learning activities online (From 2017). This ability is critical as online learning traditionally is self-directed and engagement is critical for learning (Bergdahl 2022b). Thus, teachers need to apply a balance in designing for interaction and self-directed learning, as this will influence the quality of online education (Toro-Troconis et al. 2019). Connecting design competence to the EDL framework, Lockyer et al. (2016) suggest that teachers must use insights from data to develop their learning design. Digital literacy is then reflected in learning designs that describe the online pedagogies and activities related to online tasks and resources (Lockyer et al. 2016, Lockyer et al. 2013).

3   Theoretical lens

As a theoretical lens, we use Skantz-Åberg et al's (2022) seven recurring aspects of Teachers' Professional Digital Competence (TPDC): 1) technological competence, 2) content knowledge, 3) attitudes to technology use, 4) pedagogical competence, 5) cultural awareness, 6) critical approach, and 7) professional engagement. Starting with *technological competence*, it refers to teachers acquiring "basic skills in using digital tools" (p. 7) for educational purposes and competences in solving technical problems. Also, in agreement with previous research (Hatlevik 2017, Krumsvik et al. 2016), the authors emphasize that teachers' technological competence encompasses not only the ability to use technology for teaching but also assisting students in developing digital competence and an understanding of how technology can support their learning process. Further, access to digital technologies in the workplace is considered a pre-requisite for teachers to learn how to use them in practice (Xerri and Campbell 2016).

Turning to *content knowledge,* it implies the inclusion of digital perspectives in a subject area. In line with the views expressed by (Johannesen et al. 2014, Moltudal et al. 2019), the use of digital technologies in the classroom should reflect the content that teachers want to present to their students.

Pedagogical competence concerns "teachers' knowledge and awareness of when and how to integrate digital technology into teaching in ways beneficial for students' social and cognitive needs and ability to achieve learning goals" (Skantz-Åberg et al. 2022, p. 11). The authors also emphasize the pedagogical aspect of professional digital competence encompassing abilities "to make pedagogical-didactic judgments, produce well-considered strategies and be confident in how different technologies can expand and deepen students' learning" (Skantz-Åberg et al. 2022, p. 11).

Cultural awareness in teaching and learning regarding learners' identity development across digitized contexts is another aspect to think about in discussing teachers' professional digital competence. Understanding how social conditions and technological development contributes to learning processes

are essential aspects for teachers to consider, which prevents TPDC being regarded as "an isolated phenomenon" from the society (Pettersson, 2018, p. 1005).

The *critical approach* concerns a conscious view and awareness of technology in education and society. This includes the selection and judgment of digital tools, in communication with others, as well as reflection on one's teaching practice. The critical approach is related to pedagogical competence, encompassing the development of skills to evaluate one's use of technology and the consequences of its use (Tomczyk 2019). This approach is also related to *professional engagement*, which refers to educators' administrative, communicative, collegial, and development abilities and tasks, including the ability to identify their own professional needs. Finally, the authors emphasize that the development of TPDC is a complex process, which requires the efforts of both individual teachers and their organizations, and demands strategic leadership (Pettersson 2018).

4   Methodology

The data for this paper consists of a questionnaire (n=60), an interactive workshop generating open-ended free-text answers (up to 250 characters at a time) (n=60), and 20 interviews with Municipal Adult Education (MAE) teachers in selected migrant-dense areas from Stockholm, Gothenburg, and Malmö, the three largest cities in Sweden. As Sweden is a highly digitalized country and MAE is often offered in online modes, exploring how teachers view migrant education in these online modes is important. The purpose of MAE education such as the SFI course is to provide migrants with functional knowledge and language tools to communicate and participate actively in everyday, social, and working life. Participants are expected to develop oral and written communication skills in Swedish and learn about Swedish society (Swedish National Agency for Education 2022b).

Compared to many countries, Sweden's response to the pandemic was less invasive, as no periods of lockdown were imposed (Ludvigsson 2020). While kindergartens and schools for children up to 16 years of age were kept open, most teaching in upper secondary schools, adult education, and higher education was primarily conducted remotely from 17 March 2020. For municipal adult education, though some on-site teaching became permitted from 15 June 2020 (Krisinformation.se 2020), all activities had to be conducted in such a way that the risk of spreading infection was minimized, which resulted in most municipal adult education being delivered online (Swedish National Agency for Education 2020). It was not until 1 June 2021, after the Public Health Agency of Sweden signaled a gradual transition of adult and higher education from online to on site (Public Health Agency of Sweden 2021) that educational activities on site started taking place again.

The present study was initiated in November 2020, when the second author was approached by the SFI-course director in one of the cities in Sweden and asked to give a lecture addressing digital competence and remote teaching. As education moved online, teachers needed help teaching online courses. After the lecture, the institution conducted a follow-up questionnaire focusing on SFI teachers' perceptions of the new conditions for teaching practice, the challenges they experienced, and ways of solving these challenges during the pandemic.

In April–November 2021, the third author conducted semi-structured interviews with MAE teachers in Malmö to get an in-depth understanding of the experiences of online teaching during the pandemic. Finally, in August 2022, a lecture with an interactive workshop was conducted with MAE teachers by the second author in another city in Sweden, in which the findings from the preliminary analysis of questionnaires from 2020 were presented and the experiences of teaching in 2021 were discussed. The workshop was based on participatory design principles, where participants were involved in co-creative practices to explore potential solutions to the identified problems (Sanders 2002). Collecting data in different parts of the country both during and after the pandemic allowed the authors to obtain insights into the teachers' perspectives over an extended period of time.

The data was transcribed verbatim and analyzed following thematic analysis principles (Braun and Clarke 2012, Clarke and Braun 2015, Braun and Clarke 2019). In the analysis, we followed the six-stage process of thematic analysis which included: (1) data familiarization; (2) coding; (3) searching for themes; (4) reviewing themes; (5) defining and naming themes; and (6) writing up. The data familiarization process was completed by the authors reading the questionnaire reports, free-text answers from the workshop, and interview transcripts independently several times to establish initial impressions. Then, initial impressions were discussed, and then each author coded independently. These codes were then discussed to ensure consistency and were refined and sorted into themes. Then, the codes and themes were discussed and revised. Finally, the sub-themes were defined, named, and organized into overarching themes. These themes, together with representative quotes are presented in the Results section below and are further developed in the Discussion section through the theoretical lens of the seven aspects of TPDC.

The analysis especially concerned teachers' perceptions around the availability of and competence in the use of digital resources and infrastructure (e.g., educational software, open source, web-based materials), pedagogical strategies for online teaching (e.g., learners working more independently with the teacher in a different role), and altering beliefs about what represents good education and what should be taught and how (Nieveen and Plomp 2018).

5   Results

Six themes have been discerned in the analysis of the data: I. Struggling with limited access to digital technologies, II. Supporting the development of learners' digital literacy skills, III. Facilitating the engagement of migrant learners, IV. Developing positive attitudes to online education, V. Identifying learning needs and monitoring the learning process, and VI. Encouraging interaction. These themes are presented and discussed below.

I. Struggling with limited access to digital technologies

Even though the teachers in the study had expressed a need for devices and resources to uphold and provide high-quality online education, this was not always met by their institutions, especially during the initial stages of the pandemic. Despite having access to a computer and the institutions' learning management system (LMS), the teachers reported lacking access to licensed software for several of the applications they needed. Consequently, they had to use free software, which was not always successful:

> *The municipality is not very generous with buying software, so we have to use free software. The recording application I use is free [name of application], but it records for a limited time only. (Interview 8, 2021)*

Further, many teachers expressed concerns that their learners had limited access to computers and tablets to study at home. As a result, they had to follow the courses on their mobile phones:

> *My students use the mobile phone at their jobs and [name of application] has worked for most of them, but they wish to get more IT knowledge integrated into the teaching and to work more with computers. (Workshop)*

In some schools it was possible for learners to borrow computers, although there were not enough computers for everyone. Discussing the learnings from the pandemic, the teachers expressed a strong wish to develop a practice of lending computers to learners to ensure equal access to technology:

> *It would be good if the school/municipality could lend computers to all students who need them. It makes things easier, and the need exists even if we return to classroom teaching. (Questionnaire, 2020)*

> *I got to learn a lot of new programs and the learners thought it was quite fun.*
> *However, we don't have computers for all learners. I hope they [municipal*
> *education managers] will solve that. (Interview 15, 2021)*

Some teachers also mentioned that it was not the municipalities that provided technology support during the pandemic, but primarily the companies working with educational technologies. The teachers commented about not relying on their municipalities to financially support schools for digital devices and resources. They also mentioned municipalities not prioritizing the digitalization of municipal adult education. Ensuring access to and support in the use of technological tools for marginalized groups is essential even from a long-term perspective to further develop online teaching and learning:

> *In like a year [if the pandemic ends], if they get their own computer then we will*
> *be able to do more. It feels like going back to stone age teaching to go back [to the*
> *classroom without computers]. (Interview 15, 2021)*

II. Supporting the development of learners' digital literacy skills

According to the respondents, migrant learners exhibit discrepancies in relation to digital literacy, which requires teachers to support them to develop these skills. While the teachers related learners' access to digital devices to learners' readiness and skills in using them, they also admitted that it was especially "hard for lower-educated students" (Workshop) to use them for their studies. Some respondents revealed that many of their "students never got started with their studies" (Workshop), especially at beginner levels, witnessing a "big loss [of learners] in some groups, others less loss" (Workshop):

> *[Name of application] works less well for [my class]. It was a far too quick*
> *transition to distance education. Those learners [beginners] have a longer take-off*
> *run. (Questionnaire, 2020)*

Many learners also needed extensive assistance with using the programs and the LMS, and the teachers experienced challenges supporting them in the online format:

> *I still have learners who find it difficult to turn the mic on and off /.../ In the*
> *classroom I would guide them much more. Now I leave them more to their own*
> *devices. I have given them study techniques, but face-to-face I could give them a*
> *nudge or scaffold them/.../ For [learners in] the higher levels it works much better.*
> *For beginners it has been tremendously difficult. (Interview 2, 2021)*

While some learners could find information easily online, others had problems searching for information and did not understand the instructions, which required time from teachers to assist them. The teachers emphasized the need for digital preparation, adaptation, and the development of their own practices to meet learners' needs:

> *[Change] always has to do with the learners' response. It is what makes me*
> *develop my online teaching. (Interview 17, 2021)*

In the respondents' opinion, supporting learners in developing digital literacy involves developing tacit knowledge, reflecting on online practices, and supporting learner development. However, when supporting learners' digital literacy, many teachers pointed out that migrant learners faced additional problems: it was not just that they lacked digital literacy skills, they were not used to self-directed learning and struggled with self-regulation, which made online education more challenging for many.

III. Facilitating the engagement of migrant learners

In relation to the engagement of migrant learners, four aspects were identified: a) enrolling migrant learners, b) supporting learners in developing self-direction and autonomy, c) designing engaging learning activities; and d) learners' access to a suitable physical place for studying.

When enrolling migrant learners, the teachers emphasized the necessity to provide clear and easily understood information to learners with limited schooling experiences. During the pandemic, it became clear that many learners did not only lack skills in applying for courses, but also in following online courses, which require discipline and self-regulation skills from learners and extensive teacher support:

> *Many [learners] don't receive guidance in the application process, and we get more learners with very little previous schooling. They need support with their motivation. How do we get support structures in for these learners? You [the learners] must be able to self-regulate [to study online]. (Interview 11, 2021)*

Further, the teachers claimed that the pandemic made them realize that online education requires them to put extra effort into keeping their learners engaged:

> *The challenge with distance learning is that students can disengage much easier than in the physical classroom. You must talk with them all the time, ask them questions, get them to engage. (Interview 1, 2021)*

According to the respondents, the courses they teach often have a diverse range of learners from various sociocultural backgrounds, including migrants with different levels of prior education. This places an additional burden on teachers to manage varying levels of autonomy within the same classroom. While learners who had limited experience with online schooling (or limited schooling altogether) had considerable hurdles with estimating how much and what kind of engagement the courses would require, the better-educated students got bored easily when their teachers had to help the weaker students who were struggling with planning, managing tasks, and keeping track of their study progress. Teachers would then try to make the learning activities engaging for all students:

> *You must vary the design [of the learning activity] to support engagement. Otherwise, it will be boring. You can challenge the different abilities in different ways with different designs, where everything does not have to be assessment based /.../ There are films and writing and different ways of working, to keep learners motivated and engaged. (Interview 17, 2021)*

Finally, the physical environment at home, such as living in small, overcrowded apartments with children and other family members was mentioned by the respondents to inhibit students' learning. For some learners, attending school was "a window to freedom," an opportunity to leave the household chores behind. Especially for female migrants, studying at home was compromised by doing household duties, typical for a "mother of the household," such as cleaning, cooking, doing laundry and taking care of children. The teachers empathized with their learners, mentioning that although they had to treat everyone equally in terms of grading, they felt that learners often had different opportunities to succeed based on their study environments.

IV. Developing positive attitudes to online education

Some teachers were critical about running online courses for migrant learners, primarily experiencing that their learners did not attend these courses due to being unfamiliar with distance education in their home countries, and considered this mode of learning inferior to on-site education:

> *Many learners skip school. Some refrain from studying because it is digital and are waiting for the next period. (Questionnaire, 2020)*

On the contrary, other teachers experienced both themselves and their students enjoying online courses, developing knowledge and skills in using digital tools, leading to a positive attitude to online education. There were also indications in the data that both teachers and learners developed a more positive attitude to online education as they gained more experience and skills:

> *Before, I would have said that the classroom is better. But considering all the tools*
> *we have and the support we get from work and our colleagues... you can't say that*
> *classroom or online is better. You can have learning activities online. It depends*
> *on the teacher (and) what you are used to. /.../The students can sit in the*
> *classroom too and you think they are working but they are doing something else.*
> *The most common learning activities are to be able to interact, write in the same*
> *document. We can also do that online. (Interview 18, 2021)*

V. Identifying learning needs and monitoring the learning process

Identifying learning needs remained as important in online teaching as in the physical co-located classroom. However, assessing learners' expectations, needs and progression was often more challenging in the digital classroom, as the opportunities for informal contact and talk with students were limited:

> *I have to check what their needs are. I have to guess more online. Sometimes the*
> *students don't know what they need themselves. (Interview 4, 2021)*

In addition to identifying learning needs in their courses, teachers also addressed an increased need to support migrant learners and give feedback, which was perceived as especially challenging online:

> *My pedagogical approach is hindered when shifting into online teaching. The most*
> *important part for me is feedback. Right now, I give them feedback through*
> *breakout rooms. The way I give them feedback could be different. I cannot be as*
> *active as I am in physical classroom. Nonverbal communication is hard to*
> *manifest online." (Interview 3, 2021)*

Supporting migrant learners is especially pertinent in online courses when some learners might experience being "disconnected" and lost in their studies. When physical meeting became possible, some teachers combined online and physical meetings with some of the learners with challenges:

> *[I use] a combined approach with both Lunis and physical encounters. I meet*
> *some of my students both digitally, in video meetings and some on site.*
> *(Questionnaire, 2020)*

> *I meet my students IRL [in real life] at least every two weeks now (2 classes each*
> *week in a small group)... It has made it easier to have a plan B, being able to help*
> *on site and also being able to send work materials home. (Questionnaire, 2020).*

VI. Encouraging interaction

Generally, teachers emphasized the importance of encouraging interaction with migrant students, for whom MAE teachers are frequently the only native speakers of Swedish that they practice speaking skills with. Three perspectives were identified in the data: a) advocating and supporting learners' ability to learn the language and develop networks with locals through face-to-face interactions; b) offering emotional support; and c) keeping continuous contact via social media channels.

One of the arguments for migrant learners returning to on-campus education was the pivotal role of face-to-face communication in developing Swedish speaking skills:

> *We want to teach in classrooms [on site] because we believe in [physical]*
> *meetings [for language learning]. All the talking that takes place in the classroom*
> *is the best way to learn another language. Peer-peer talk, and learner-teacher talk*
> *happen more easily IRL [in real life]. (Questionnaire, 2020)*

Many teachers commented that the pandemic obstructed migrant learners' opportunities to develop networks with native Swedes and other migrants, which is an essential integration prerequisite, and that this situation exacerbated their social exclusion:

> *If they sit in isolation and take the entire Swedish as a second language course*
> *asynchronously [it is not optimal]. One should think about which mode is suitable.*
> *Half distance—is that they either come to school or join synchronously online. I*
> *can see that some synchronous elements might be needed. (Interview 11, 2021)*

MAE courses before the pandemic that included some informal talk turned into task-focused interactions that lacked informal chitchat. According to some teachers, this change had a profound negative impact in terms of slower language and societal learning, and challenges in developing informal contacts. Only a few initiatives were mentioned for supporting teacher-learner and learner-learner interactions outside the classroom, including an online language café:

> *Digital language café offered via the library [is good], or perhaps the school can*
> *offer its own digital language café for the students at the school. (Questionnaire,*
> *2020)*

Some respondents mentioned offering emotional support to their migrant learners. The teachers commented that many newly arrived migrants among their learners were still stressed after leaving their home countries. For many newly arrived migrants, the pandemic was an extremely stressful experience as they lacked language skills to understand the TV or online media messages about the pandemic and its impact in Sweden. Further, learners living in migrant-dense areas, which were especially affected by the pandemic, had additional problems focusing on their studies. Thus, some teachers devoted time in their MAE courses to providing information about the pandemic in simple Swedish to help calm their learners and enable them to focus on their studies.

The teachers also mentioned combining social media with the LMS to increase interactions with their students and among students. This was primarily used for classes for beginners and enabled regular and immediate teacher-learner and learner-learner contact, which was essential as these students were perceived as experiencing the greatest challenges with managing their education. The use of social media was also especially useful for learners without computers who used smartphones for their studies.

6 Discussion

The COVID-19 pandemic necessitated a sudden shift to online education worldwide, highlighting the significance of teachers' professional digital competence (Bond et al. 2021). Though there is a plethora of studies that show the educational opportunities of disadvantaged groups were disproportionately affected by the pandemic (Barker 2021, Gan and Sun 2021), research on the digital competencies and skills that are essential for ensuring successful online education for these groups remains scarce. Addressing this gap, our study explores aspects of TPDC for managing adult migrant classrooms during the pandemic-induced transition to remote teaching. We applied the seven aspects of TPDC proposed by Skantz-Åberg et al. (2022), which are: (1) technological competence, 2) content knowledge, 3) attitudes to technology use, 4) pedagogical competence, 5) cultural awareness, 6) critical approach, and 7) professional engagement, to analyze interviews, questionnaires, and free-text answers from a workshop with adult migrant education teachers in three major Swedish cities with high migrant populations.

Our results reveal the intricate array of competencies and skills required for managing online education for vulnerable populations. The study's findings revealed that teachers demonstrated a *critical approach, content knowledge,* and *professional engagement* in providing online education for migrants by showing awareness of the role of technology in the education process, conscientious digital tool selection, reflective teaching practices, and articulation of learners' needs for successful online instruction.

For teachers working with migrants, *technological competence* and *cultural awareness* appear to be the most important aspects of TPDC. In our study, similar to previous research, some migrant learners had limited digital literacy skills (Smith et al. 2022, Vanek 2017), which hampered their use of digital tools and required teachers to provide support (Xerri and Campbell 2016). This finding calls for the need to integrate digital literacy instruction into online courses for migrant populations. Further, our findings also show that one cannot take for granted that learners from vulnerable groups, such as migrants in our study, have access to digital technologies (Baldassar et al. 2022) that are appropriate for educational purposes. Though smartphones could partially compensate for migrant learners' lack of access to computers, this limited their opportunities to follow all parts of online courses (Berbyuk Lindström and Rodríguez Pozo 2020). This finding indicates the need for schools to consider providing access to technology and licensed software for vulnerable populations, to safeguard digital inclusion (Pérez-Escolar and Canet 2022, Baldassar et al. 2022).

Another essential aspect of TPDC in offering online education for migrants is *cultural awareness*. Teachers need to understand the conditions that determine their learners' abilities to use digital technologies for educational purposes in order to deal with diverse online classrooms with migrant students, including their educational levels, cultural backgrounds, and language skills. The teachers also experienced some of their learners perceiving online education as not legitimate and not equivalent to on-site education. Consequently, teachers revealed that overcoming migrant learners' skepticism of online education, and enhancing acceptance of this mode of learning was essential. This is in particularly important to secure participation in education, and avoiding students dropping out or not finalizing their studies (Swedish National Agency for Education 2022a). Further, our findings highlight the value of teachers' understanding of different expectations concerning learners' autonomy and self-directedness in online education. While online education requires a high degree of autonomy (Ludwig and Tassinari 2021), it is questionable if learners with limited digital literacy skills can cope. Further, our findings also indicate the increased need for feedback and guidance for migrant learners. This finding can potentially be related to learners' expectations about autonomy and teachers' authority, which to some extent is influenced by culture, as learners from individualistic cultures like Sweden often show a higher degree of autonomy and expect guidelines compared to learners from collectivistic countries that use a more authoritarian approach (Palfreyman 2003). Considering these factors in assessing what kind of educational mode can be chosen and what kind of institutional support can guide learners and complement teachers' work is pivotal.

According to the findings, teachers perceive enforced online education as negatively impacting migrant students' integration. As the learners in our study were living in migrant-dense areas, their contacts with Swedish-speaking citizens were limited during the pandemic, hampering their Swedish language learning and integration (Ndofor-Tah et al. 2019). Compared to other countries, the restrictions in Sweden were not that harsh, and no lockdowns were imposed by the government during the entire pandemic (Ahlström et al. 2020, Ludvigsson 2020), however these restrictions still limited migrants' opportunities to attend social gatherings and communicate with locals. Sensing that migrant learners were missing crucial contact outside the classroom with surrounding society, the teachers in our study report compensating for this by putting in extra effort to enhance interactions in the online classroom.

Our results also clearly show the need for teachers to be aware of differences in learners' study conditions, which may affect their well-being and learning (King 2020), and we consider this to be an aspect that could expand the conceptualization of TPDC. Our study indicates the impact of socioeconomic factors such as the learners' home environment or learners' capabilities to manage their online education. Compared to on-campus studies, when all learners have equal opportunities in terms

of access to lecture halls and libraries, the pandemic exacerbated the inequalities among learners with different living conditions. As has been pointed out elsewhere (Bond et al. 2021) not all learners have a suitable place to study. The teachers in this study gave numerous examples of how they had developed their practices during and because of the pandemic, to engage learners online.

To sum up, the study indicates that the pandemic contributed to MAE teachers developing their professional digital competence and teaching practices as well as shifting their *attitudes to technology use*, where technology acceptance seems to have increased, along with acknowledging that online and distance education can be of high quality and is needed (Bergdahl 2022a). Our study also signals the need for developing knowledge and understanding of pedagogical approaches that are adapted to learners with different needs, which is an essential step in making online education inclusive, manageable, and attractive for different groups. Finally, during the pandemic, online education was a must rather than a choice. Considering the negative impacts of online education on migrant socialization in Sweden that has been presented in this study, the suitability of online education for migrants after the pandemic needs further discussion.

7 Concluding remarks

The study's results provide evidence of accelerating digitalization in MAE, indicating that the pandemic had an impact on teachers' digital skills, creativity, and innovation. It also enabled MAE teachers to integrate new tools into their teaching, and more autonomy to form and design courses to accommodate students' needs. The rapid shift to online education that occurred because of the pandemic also draws attention to additional aspects of TPDC to ensure equal education opportunities for all learners. Specifically, facilitating learners in the online format, ensuring access to digital technologies, and being aware of students' personal study conditions.

8 Limitations

The study is delimited to the Swedish context of municipal adult education. Although most of the teachers taught second language learning courses, teachers from other subjects were also included. As the study was conducted over approximately 2 years (22 months), the impact of the COVID-19 pandemic varied in different regions of Sweden and over time.

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