

## University of Groningen

### Providing emergency remote teaching

Klusmann, Birte; Trippenzee, Miranda; Fokkens-Bruinsma, Marjon; Sanderman, Robbert; Schroevers, Maya J.

*Published in:*  
Teaching and Teacher Education

*DOI:*  
[10.1016/j.tate.2022.103815](https://doi.org/10.1016/j.tate.2022.103815)

**IMPORTANT NOTE: You are advised to consult the publisher's version (publisher's PDF) if you wish to cite from it. Please check the document version below.**

*Document Version*  
Publisher's PDF, also known as Version of record

*Publication date:*  
2022

[Link to publication in University of Groningen/UMCG research database](#)

*Citation for published version (APA):*

Klusmann, B., Trippenzee, M., Fokkens-Bruinsma, M., Sanderman, R., & Schroevers, M. J. (2022). Providing emergency remote teaching: What are teachers' needs and what could have helped them to deal with the impact of the COVID-19 pandemic? *Teaching and Teacher Education*, 118, Article 103815. <https://doi.org/10.1016/j.tate.2022.103815>

#### Copyright

Other than for strictly personal use, it is not permitted to download or to forward/distribute the text or part of it without the consent of the author(s) and/or copyright holder(s), unless the work is under an open content license (like Creative Commons).

The publication may also be distributed here under the terms of Article 25fa of the Dutch Copyright Act, indicated by the "Taverne" license. More information can be found on the University of Groningen website: <https://www.rug.nl/library/open-access/self-archiving-pure/taverne-amendment>.

#### Take-down policy

If you believe that this document breaches copyright please contact us providing details, and we will remove access to the work immediately and investigate your claim.

*Downloaded from the University of Groningen/UMCG research database (Pure): <http://www.rug.nl/research/portal>. For technical reasons the number of authors shown on this cover page is limited to 10 maximum.*



## Research paper

# Providing emergency remote teaching: What are teachers' needs and what could have helped them to deal with the impact of the COVID-19 pandemic?



Birte Klusmann <sup>a,\*</sup>,<sup>1</sup>, Miranda Trippenree <sup>a,1</sup>, Marjon Fokkens-Bruinsma <sup>b</sup>,  
Robbert Sanderma <sup>a</sup>, Maya J. Schroevers <sup>a</sup>

<sup>a</sup> Department of Health Psychology, Health Sciences, University of Groningen and University Medical Center, Groningen, Groningen, the Netherlands

<sup>b</sup> Department of Teacher Education, Faculty of Behavioral and Social Sciences, University of Groningen, the Netherlands

## HIGHLIGHTS

- Teachers experience a wide array of needs during the COVID-19 pandemic.
- Thematically, needs centered around the person, teaching, students, and schools.
- Teachers were insufficiently prepared to provide emergency remote teaching (ERT).
- This study stresses the importance of fostering teachers' well-being.
- For sustainable change in education, considering teachers' needs is crucial.

## ARTICLE INFO

## Article history:

Received 12 May 2021

Received in revised form

17 June 2022

Accepted 23 June 2022

Available online 18 July 2022

## Keywords:

Emergency remote teaching (ERT)

Needs assessment

Teachers

Education

COVID-19

Psychological well-being

## ABSTRACT

When schools closed due to the COVID-19 pandemic in March 2020, teachers suddenly had to teach remotely. To better understand the possible impact of these measures on teachers' work functioning and well-being, this study examined teachers' needs. Using a thematic analysis approach analyzing the 1,115 open-ended answers, three domains related to needs were identified: *work-life balance and working from home, teaching and interaction with students and parents, and school management and colleagues*. Findings are interpreted from existing frameworks (i.e., Jobs Demands-Resources (JD-R) model and Self-Determination Theory (SDT)). We also identified several unique needs, such as adjusting learning goals.

© 2022 The Authors. Published by Elsevier Ltd. This is an open access article under the CC BY license (<http://creativecommons.org/licenses/by/4.0/>).

## 1. Introduction

In order to reduce the spread of COVID-19 in 2020, schools were closed for an extended period across many countries, including in the Netherlands. This meant that teachers, parents, and students were suddenly faced with significant uncertainties of how education could and would be facilitated. Before the school closures, a teacher's job was predominantly characterized by face-to-face interaction

with students. Within just a few days after the start of the pandemic and measures, teachers were forced to convert all of their practices to an online format, to continue their teaching (Allen et al., 2020). The term emergency remote teaching (ERT) refers to a temporary shift in the delivery of education from the typical modes of teaching to distance or online teaching, in response to a pressing and crisis situation (Hodges, Moore, Lockee, Trust, & Bond, 2020, March 27).

ERT confronts teachers with several consequences which may be challenging, such as managing work from home, handling different digital tools for online learning, and keeping in touch with students digitally. Hodges et al. (2020, March 27) argued for separating ERT from high-quality online education. They also pleaded for using the experiences from ERT as an evaluation for further

\* Corresponding author. HPC FA12 Hanzeplein 1, POB 30.001, NL 9700RB, Groningen.

E-mail addresses: [b.klusmann@umcg.nl](mailto:b.klusmann@umcg.nl), [b.klusmann@rug.nl](mailto:b.klusmann@rug.nl) (B. Klusmann).

<sup>1</sup> Shared first author.

development of high-quality (online) education. The current study was carried out to reach a better insight into what teachers needed and what could have helped them – in terms of professional development and well-being – to deal with emergency remote teaching more adaptively.

Results of this broad needs assessment may provide insight into how to adapt and optimize the technology-enhanced learning and teaching and how to support teachers in this regard. Currently, more than two years after the initiation of the first lockdown, the educational sector has mainly returned back to face-to-face teaching, yet the possibility of reinstating a number of restrictions is still present. As such, the results of this study may be useful to better understand the consequences of such measures for teachers and inform future policy makers on which measures could be implemented and how. In the sections below, we will review the literature on what is already known about the impact of COVID-19 on teachers' functioning and well-being.

### 1.1. COVID-19 impact on teachers' work functioning

Several recent studies have assessed the impact of the COVID-19 pandemic on teachers' work functioning (e.g., [Ferri et al., 2020](#); [Kim & Asbury, 2020](#); [Kundu & Bej, 2021](#); [van der Spoel et al., 2020](#)). A qualitative study in the United Kingdom showed that teachers worried specifically about the well-being of vulnerable students ([Kim & Asbury, 2020](#)). Teachers also expressed a need for more clarity from the government and their schools about the current measures in order to plan ahead. Similar to these results of [Kim and Asbury \(2020\)](#), a quantitative cross-sectional study among 310 German teachers showed that the majority of teachers wished to be better informed and supported by their school organization ([Vodafone Stiftung Deutschland GmbH, 2020](#)). This study also indicated that teachers perceived the contact with students as crucial but challenging, as they could not reach everyone. Teachers also rated organizing the different educational tasks, including providing feedback and evaluating tests, as challenging ([Vodafone Stiftung Deutschland GmbH, 2020](#)). By including a large sample of teachers and a broader needs assessment, the current study will complement and expand these findings, allowing for a more complete picture of the variety of work functioning-related needs experienced by teachers.

### 1.2. Teachers' digital competencies

The widespread shift to emergency remote teaching also spotlights the necessity for the professional development of digital competencies among teachers. Earlier research, before the COVID-19 pandemic, showed that newly qualified teachers perceived the quality of Information and Communication Technology (ICT) training during their teacher education as poorly ([Gudmundsdottir & Hatlevik, 2017](#)). In the educational context, ICT can be used to support, enhance, and optimize the delivery of education. With less than half of the teachers (43%) feeling properly prepared for digital practices in their teaching ([OECD, 2020](#)), the need for digital skills for teaching was one of the most central needs of teachers regarding their professional development ([OECD, 2020](#)) and many teachers feel unprepared to incorporate different digital techniques in their curricula ([Coyle et al., 2010](#)). As the use of ICT was suddenly even more pressing due to school closures induced by the COVID-19 pandemic, it can be expected that many teachers experienced difficulties in using ICT devices. A study among Russian higher education teachers during COVID-19 revealed that a lack of digital literacy, accompanied by a lack of time to prepare, was identified as the main challenge during the transition to online teaching ([Almazova et al., 2020](#)). Also, [Çınar et al. \(2021\)](#) reported that

teachers' need for appropriate ICT training was pressing. To be able to develop better support and training of teachers in the use of ICT in their teaching, it is first necessary to understand teachers' specific needs and challenges regarding their digital competencies.

#### 1.2.1. COVID-19 impact on teachers' psychological well-being

Besides challenges related to teachers' work functioning, it is likely that the pandemic and teaching from home may also impact teachers' personal life and psychological well-being ([Taylor, 2019](#)). Even though the literature is scarce, a few studies assessed the potential impact of the COVID-19 pandemic on teachers' well-being, with results showing higher levels of distress in teachers due to an increased workload ([Aperribai et al., 2020](#); [van der Spoel et al., 2020](#)) and psychological symptoms ([Dabrowski, 2020](#); [Pressley, 2021](#); [Stachteas & Stachteas, 2020](#)). Another study indicated that teachers experienced elevated levels of confusion and stress due to the strains of their profession as online education had to be provided ([UNESCO, 2020a](#)). [Hadar et al. \(2020\)](#) suggested that not all teachers may have the necessary social-emotional competencies to cope with the heavy burden of this situation. Earlier research (i.e., before the COVID-19 pandemic) found that especially teachers with lower levels of job satisfaction and whose profession-related needs are not met (e.g., the feeling of belonging) are susceptible to burnout and stress ([Skaalvik & Skaalvik, 2011](#)) and are more likely to leave their profession ([Blömeke et al., 2017](#); [Klassen & Chiu, 2011](#); [Madigan & Kim, 2021](#)). Especially in times of challenges and strains, such as the COVID-19 pandemic, it is necessary to understand how teachers cope with difficulties and what they need. This will allow for better support with the appropriate measures, and to help teachers dealing more adaptively with these emotional strains.

Different models exist that describe and explain the factors related to occupational health and teachers' well-being. One of the most used models is the Job Demands-Resources model (JD-R model), which assesses the relationships between work characteristics, i.e., job demands as well as resources, and work outcomes ([Schaufeli & Taris, 2014](#)). The model assumes that higher job demands lead to stress reactions, which increase the risk of undesirable outcomes, e.g., exhaustion, burnout or health complaints. Having appropriate and necessary resources available, will lead to a higher motivation and productivity ([Schaufeli & Taris, 2014](#)). Another relevant and well-known model is the Self-Determination Theory (SDT; [Deci & Ryan, 2013](#)), which posits that humans have basic psychological needs, including the need for autonomy, relatedness, and competence. Fulfilling these needs is assumed to be essential for people's psychological health and growth ([Deci & Ryan, 2013](#)). Based on these two models, it can be assumed that if teachers perceive their job demands to be high, the available resources to be insufficient, and certain basic needs not met, this will impact their work functioning and well-being.

## 2. Aims and research questions

With the current study, we aimed to grasp a comprehensive picture of the needs of Dutch teachers regarding their professional work functioning and sense of psychological well-being during the first months after the start of the COVID-19 pandemic. As we did not want to limit our needs assessment to the factors suggested by the JD-R model and the SDT, we adopted a comprehensive analysis approach, looking at a broad range of needs reported by teachers. As our main interest was to better understand how teachers were dealing with the impact of the pandemic and their needs regarding their maintenance of their professional and psychological functioning, the research question of this study was two-fold: *What are the needs of Dutch teachers in the first phase of the COVID-19*

*pandemic, and how do identified needs relate to teachers' psychological well-being?*

By studying the needs of teachers, the results may offer an opportunity to develop guidelines and practical implications to better support teachers managing online teaching, while at the same time managing the personal impact of a pandemic or another possible emergency situation. It is a pivotal moment in time for the educational sector, with unique chances to induce long-term change and innovation with regard to digitalization and the integration of online tools in the curriculum. In the following sections, we describe our methods and subsequently, we present our findings in text, supported by tables. As we aim to relate our findings to other literature and theoretical frameworks post-hoc, a large part of this paper is devoted to the discussion.

### 3. Method

#### 3.1. Recruitment, sample and procedure

This study is part of a larger project aimed at assessing the psychological well-being, adaptation, and insights experienced by Dutch teachers throughout the COVID-19 pandemic. The research team consisted of three researchers in the field of clinical and health psychology, and two educational researchers, with a specific focus on teachers' well-being and resilience. Between April 26th and May 13th, 2020, teachers were approached for the study through social media platforms, including Facebook, Twitter, and LinkedIn. The study was presented as a research study focused on teachers' psychological well-being during COVID-19. Via the snowball sampling method, teachers across the Netherlands were reached. Primary and secondary schools were also asked to distribute the online questionnaire among their teachers on a voluntary basis. Respondents who indicated they were working as a teacher (primary, secondary, special, or higher education) and who had sufficient proficiency in the Dutch language to fill-in the questionnaire were eligible to participate. At the beginning of the survey, teachers were briefly informed about the aims of the study. Electronic informed consent was requested from each participant before continuation. The survey took approximately 20 minutes to complete.

A total of 1,115 Dutch educators were eligible and completed the survey. The final sample consisted of 76.7% females ( $n = 855$ ) and 22.7% males ( $n = 253$ ) (0.7% answered "Other or Rather not say"). 24.4% of the participants ( $n = 270$ ) worked in primary education, 2% in special education ( $n = 22$ ), 67.2% in secondary education ( $n = 749$ ) and 6.5% in vocational and higher education ( $n = 73$ ). Participants' age was between 19 and 69 years old with a mean of 43 years. On average, respondents had 15 years of teaching experience (ranging from less than a year to 47 years).

##### 3.1.1. Study context

On March 16th, 2020, the Dutch government decided to close all schools and other educational facilities in order to contain the spread of the COVID-19 virus. On April 25th, the government announced via a press conference that primary schools were opening in a hybrid mode, from mid-May, and that secondary schools would open again in June. Higher education facilities remained closed.

#### 3.2. Data collection and measures

The online questionnaire was available in Dutch and created in Qualtrics (Qualtrics®, Provo, UT). Besides demographic and work-related information, teachers were asked to answer the following central question.

**Needs of teachers.** In order to map out teachers' needs regarding providing online emergent remote teaching, teachers were invited to answer the following open-ended question (after having filled in several brief questionnaires related to their work functioning and well-being): "What are your needs? If you think about your struggles in the last weeks, while working from home, what could have helped you deal with it?". Length of the answers varied from a few words to 19 sentences. In total, 26,160 words (in the answers from the 1,115 teachers) were analyzed for this study.

The data were analyzed by two researchers who were both familiar and experienced with qualitative research approaches.

#### 3.3. Data analysis

The raw data was first anonymously transferred to an Excel file. We applied a thematic inductive analysis approach, which is a method for identifying, analyzing, and reporting patterns (themes) within data, without a preexisting coding frame, or researcher's analytic preconceptions (Braun & Clarke, 2006). With a focus on exploring teachers' needs, an essentialist and realist approach was adopted. In line with Braun and Clarke (2006), we followed the following steps:

1. For the first 15% of the data, both coders (MT and BK) read participants' answers several times to become familiar with the data, and took notes of initial ideas;
2. Both coders produced the initial codes by labelling meaningful content in the data;
3. During a first meeting, these two concept codebooks were merged and discussed. Preliminary themes and codes were distinguished;
4. BK continued coding based on this codebook until 50% of the data was coded;
5. During a second meeting, complex cases were discussed, and the codebook was updated, while finalized themes of codes were defined;
6. This final codebook was used for coding the other 50% of the data by BK, after which MT systematically checked every 5th answer with this final codebook. During a final discussion meeting, the last discrepancies were resolved. New codes and themes were created, and some themes were aggregated.

We assessed the quality of the study conducted by exploring if the inquiry's findings are worthy of attention (Lincoln & Guba, 1985), aiming for trustworthiness. In the preparation phase of the study, we carefully considered our data collection method, sampling strategy, and the unit of analysis. Moreover, we had frequent discussion meetings in which we reflected on the categorization and abstraction. The degree of interpretation was touched upon during the same discussion meetings and by systematically checking each other's codes. Lastly, saturation was reached as the comparative answers kept appearing in the 1,115 answers. The final codes, categories, and themes were translated from Dutch to English by the first and second author together. The participants' quotes in this article were translated by the first author and examined by the second author and two independent bilingual speakers to ensure the quality of the translation.

In terms of ethical considerations, this study was conducted in accordance with the Declaration of Helsinki and was approved by the Medical Ethics Committee of the University Medical Center Groningen (UMCG Research Register Number: 202,000,259). Electronic informed consent was required before proceeding with the survey, and no-consequences of withdrawal were highlighted. The integrity of the surveys was guaranteed through informing respondents about what their personal data would be used for,

compliant to the General Data Protection Regulation (GDPR) and the Netherlands Code of Conduct for Scientific Practice. To guarantee anonymity, all data were processed by allocating unique IDs.

#### 4. Results

##### 4.1. Overview of coding

We read and coded the responses of 1,115 teachers to determine their specific needs. A total of 122 answers did not focus on the question asked, and therefore, was coded as “unable to code”. Fifty-one participants expressed no need by simply stating “nothing” or by explaining they perceived the situation positively and did not experience any problems. In the 943 answers left, teachers varied in the number of needs they described, ranging from one need ( $n = 468$ ) or two needs ( $n = 323$ ) to three to seven needs ( $n = 146$ ). As no specific instruction was provided to participants, answers to this question can be considered spontaneously and as a reflection of their current individual situation.

Needs distilled from participants' answers centered around three themes: (1) *teachers' work-life balance and working from home*, (2) *teaching and interaction with students and parents*, and (3) *school management and colleagues*. The first set of codes focuses on teachers' needs regarding working from home, including the need to balance between work and their personal life and necessary facilities to teach from home. The second set of codes includes the need for more knowledge or information on teaching remotely and students' role and engagement. The third set of codes includes needs regarding school management, policy changes, and interaction with colleagues. In total, we coded 1,650 needs, 488 in theme 1, 590 in theme 2 and 519 in theme 3. In the following, each theme is described in detail with the accompanied table listing all codes and their frequencies. The results section finishes with a description of needs which did not fit well in the current thematic scheme. Here we followed the suggestion of Braun and Clarke (2006) to create a theme called *miscellaneous*. Fig. 1 illustrates the different layers of codes and themes. The complete codebook can be requested from the corresponding author.

##### 4.2. Theme 1: teachers' work-life balance and working from home

Needs shown in Table 1 indicate that teachers found it challenging to separate their private life and work, and they expressed the need for a clearer line between the two. Within this theme, teachers frequently described their need for fixed working hours and a fixed daily structure. Due to the lack of this, many teachers felt the pressure to be present and reachable at all times:

**Table 1**  
Identified needs in theme 'teachers' work-life balance and working from home' in order of frequency.

Teachers' work-life balance and working from home <sup>a</sup>	Frequency
Fixed working hours and daily structure	112
Juggling different responsibilities	89
Workplace at home	62
Self-care	61
Technical facilities for home office	52
Facilities for home office	24
Day-care for own children	24
Reassurance and feedback from students and their parents	18
Dealing with workload	14
Contact with others	12

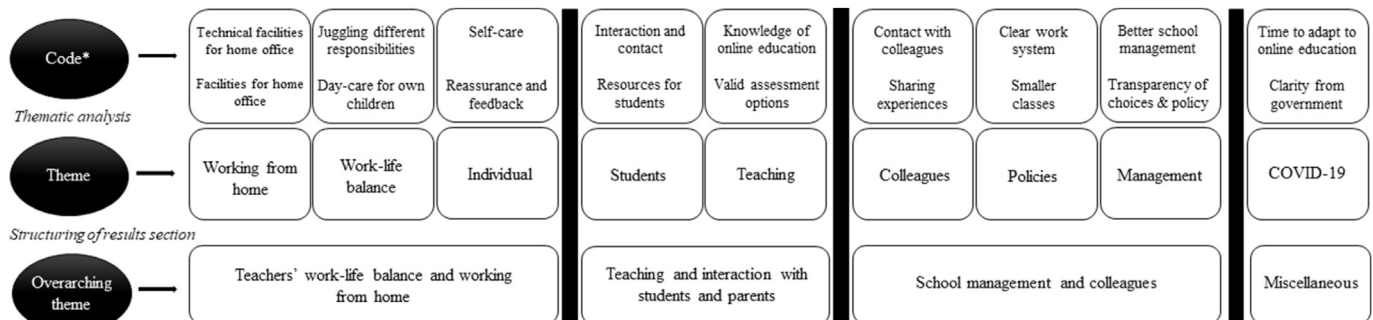
<sup>a)</sup> Codes with a frequency of <10 are not depicted in this table, the full codebook including frequencies and illustrative quotes can be found in the supplementary material S1.

I find it stressful that my home environment is also my work environment. I feel like I'm constantly "on". Students and parents do not respect regular working hours and come up with questions at the craziest times.

Needs for structuring the work place, as well as clear time slots, and fixed moments during which students, parents, and others can contact teachers were expressed by many teachers. Next, juggling different responsibilities was mentioned to be difficult, especially among teachers whose own children required support and attention while teachers had to develop and give their online lessons to students. Having better possibilities for day-care for their own children was indicated as a need and possible solution for this. Teachers mentioned that caring for their children and also for other relatives or loved ones often conflicted with their role as a teacher:

It is difficult to combine my work [the classroom] with two children who also have to do their schoolwork at home, the housework, care for my old grandmother (where there is almost no care anymore due to shortages). And then my duo partner also became ill, so that I am now working for five days instead of 3.

Besides the frequently mentioned need to keep a work-life balance, teachers also expressed needs concerning them as individuals. The most frequent one was a need for self-care. Several teachers mentioned physical complaints, such as neck, shoulder, and back pain, mostly stemming from sitting behind their laptop for many hours. Providing online education seemed to be more



\*Exemplary codes are presented

Fig. 1. Overview of codes, themes and overarching themes.



stressful for teachers, resulting in less time for themselves, to relax, and recharge. In line with this, teachers also expressed a need to be able to better deal with the increased workload they had been experiencing. In order to handle these issues, teachers posed the need and necessity for more moments of relaxation and exercise (i.e., taking a walk), and also receiving psychological help or access to a physiotherapist:

It is so much busier to work from home that there is actually no time for yourself and you do not relax properly.

Furthermore, a need for reassurance and feedback from students and their parents was named. Teachers expressed that receiving feedback on their work and what should be done better would have helped them personally. Some teachers also indicated a need for more contact with others, as feelings of loneliness or missing family and friends occurred.

Another frequently reported need within the first theme was a request for a suitable workplace at home. Many teachers expressed the need for a separate working station or an office at home to allow for more focus and tranquility, especially when other household members were present. Teachers reported that having the option to use different work locations other than their house or to provide online lessons from their own classrooms would have been helpful. In relation to this, teachers mentioned that they needed more facilities at home to enable them to provide online education. These included facilities regarding their workspace, such as a suitable chair or desk, technical facilities, such as hardware - as well as software - i.e., laptop, second screen, access to certain programs or a better internet connection. It was also reported that teachers wanted more support from their employer, for example, a budget for new purchases, using school utilities or being able to use programs at home that are only accessible at their school:

More than a laptop from the employer, but also a good keyboard, a larger screen and, if necessary, a good office chair.

Concluding, some needs seem straightforward, such as fixed work hours and facilities for a workplace from home, while the need for juggling different responsibilities and self-care are more diverse in interpretation.

### 4.3. Theme 2: Teaching and interaction with students and parents

The needs depicted in Table 2 relate to the practices of teaching and interactions with students and parents. Teachers reported that they faced several challenges while teaching remotely and expressed a high need for visibility of students and interaction and contact with students. It was very tough for teachers to get in contact with students while teaching remotely:

Real teaching is impossible, and students think far too quickly that they understand. You can't do much with that. A physical lesson provides much more direct interaction, necessary for proper instruction. I think many will come back from a rude awakening soon.

Not being able to track the progress of students, not having insight into whether students understood the explanation, and a lack of non-verbal communication were described as the main problem when teaching online. For some teachers, the necessity of contact with and visibility of students was considered essential for teaching, leading them to reflect on whether they wanted to

**Table 2**  
Identified needs in theme 'teaching and interaction with students and parents' in order of frequency.

Teaching and interaction with students and parents <sup>a</sup>	Frequency
Interaction and contact with students	101
Visibility of students	82
Knowledge of online education	59
Software for online education	55
Valid assessment options	41
Collaboration with parents	55
1. Helping their children	36
2. Contact	16
3. Understanding	3
Possibilities to exert control	30
Best teaching practices for online education	27
Motivating students	25
1-on-1 supervision	20
Resources for students	17
Concerns about vulnerable students	15
Training in online education	15
Digital literacy of students	9
More experience with online education	8

<sup>a</sup>) Codes with a frequency of <8 are not depicted in this table, the full codebook including frequencies and illustrative quotes can be found in the supplementary material S1.

continue their teaching if online teaching should continue.

Based on the lack of contact with and visibility of students, several teachers expressed a need to have students more in sight, for example, by mandating to keep cameras on. Teachers reported struggling with this and asked for more support and knowledge on how to manage this. Additionally, some teachers expressed their concerns about vulnerable students and indicated a necessity for those students to be able to go to school to meet with their students one-on-one, or to possibly visit them at their homes. However, such a process would take much more time potentially affecting the workload of teachers:

I would like to speak to the students 1 on 1 much more. I do that now, but in my spare time.

As students needed to stay home for their education, the collaboration of teachers with parents and caregivers became more essential. A need for (more) contact with parents was expressed, also related to the required help from parents and caregivers with teaching their children. Teachers expressed that they would have welcomed a better understanding of how to communicate with the parents. In line with this, a need for manuals for parents was stated. It was recognized that the role of parents and their support is highly important and necessary for the success of providing online education:

Especially with children who find it very difficult, more parental support is needed, even though they may also have little time. Parental support is now more important than ever.

Additionally, teachers mentioned the need for a greater digital literacy in students. A lack of digital competence complicated their teaching and reduced students' ability to work independently on their own at home. Other needs reported by teachers related to students having essential resources to study at home, such as a laptop or tablet, and a stable internet connection, in order to be able to facilitate high-quality online learning.

Regarding the teaching practices, needs for methodological support in online teaching were reported by teachers, including a need for general knowledge of how to provide online education to students. Specifically, teachers indicated a need for access to

suitable software for online education that serves the needs of teachers as well as students. This relates to the need for visibility of students, as some online programs teachers were now using for their teaching could only display a maximum of four student videos:

A difficult thing about teaching remotely is that in the Microsoft Teams program, only four faces can be seen at the same time.

Moreover, teachers requested more support and knowledge on valid assessment options for students in a digital environment:

A good way of testing must be devised. A way that gives a reliable grade, which prevents students from cheating and teachers from having to check enormous practical assignments.

Some teachers indicated that it would be helpful to have more “best teaching practices” for online education, such as the availability of online lesson materials or databases with instruction videos and exercises. Teachers also indicated a need for more training in online education (e.g., pedagogical and technical skills) or simply more prior experience. Participants suggested that following courses may help to improve their knowledge:

I would very much like to have access to online workshops that explain the ICT possibilities (and instructions!) so that I can optimize my digital education. I don't think education from before the Corona situation will come back. We [teachers] will organize our education differently, and I would like to be trained for this as soon as possible.

In summary, the second theme contains needs relating to teachers' interaction with their students and online teaching practices. The need for more (in-person) contact with students emerged most frequently. Although this might not always be easy to create, options, such as interactive online platforms for exchange, may help.

#### 4.4. Theme 3: school management and colleagues

The needs reported in Table 3 concern teachers' needs regarding school management and colleagues. Teachers indicated a need for more or better school management, including more guidelines,

**Table 3**  
Identified needs in theme 'school management and colleagues' in order of frequency.

School management and colleagues <sup>a</sup>	Frequency
(More/better) school management	75
Clear work system	75
Contact with colleagues	147
1. Social or informal	30
2. Formal	39
3. Sharing experiences	66
4. Help and support	12
Understanding and support from school management	33
Less administrative work	24
Adjustment of learning goals for students and teachers	24
Transparency of choices and policies	18
Smaller classes	15
ICT-support or ICT-expert	13
Contact with school management	11
Freedom to make own choices	10

<sup>a</sup>) Codes with a frequency of <10 are not depicted in this table, the full codebook including frequencies and illustrative quotes can be found in the supplementary material S1.

clarity, and guidance from their school management or supervisor. Specifically, teachers described a need for guidelines regarding the use of communication channels, dealing with the (online) absence of students, and the use of software for online teaching. This need for more or better school management was accompanied by a need for a clear work system, as teachers wished for uniformity in approach, methods, platforms (i.e., Teams, Magister), and protocols. However, a few teachers described a need for freedom in choosing how to provide their education:

The feeling of freedom and confidence to really do something other than a continuation of what I would do in the classroom. So do not try to stick to what we [teachers] were doing, but offer new material in a different way so that it fits the form of education we [teachers] are now forced to deal with.

A need for transparency of choices and policies was expressed, and seemed to be supplemented by the need for more contact with school management or supervisors. More personal understanding and support from school management were also requested several times. Specific support from an ICT-expert or support desk to help with teaching was also posed as a need, especially during the starting phase of remote teaching.

In addition, teachers mentioned that they missed contact with their teaching colleagues. They reported a need for more contact, to share experiences, and a need for help and support. One teacher explained that they missed information on students' workload in other courses and therefore wished for more formal contact opportunities with other teachers. The need for sharing experiences with colleagues was related to wanting to get inspired and to receive feedback. Lastly, teachers said they looked for more help and support from colleagues, especially from those with a lower workload. Colleague-related needs accompanied a uniform working system, as many teachers required more agreement and alignment with the practices of their colleagues.

The need for the adjustment of the learning goals and expectations is less directed at either management or colleagues but focuses on the educational system in general. Some teachers described a need for less pressure and lowering of expectations for themselves. For example, one teacher referred to a pressure that lessons had to be prepared and taught corresponding the former face-to-face curriculum. Other teachers expressed a need for fewer demands on students' work, less urge for assessments, and less performance pressure on students. Other teachers suggested that worries about learning delays would be redundant when learning goals and expectations would be adjusted:

Now parents are afraid that learning delays will arise, but in my opinion, these delays can only arise if we [teachers] set goals that do not suit the student and the circumstances in which a student learns.

More specific needs were also mentioned. These included a need for less administrative work, including fewer mandatory evaluations or e-mails, a need for smaller classes, so more interaction could be simulated in an online format, and a need for student-centered education, which would ensure that individual student competencies get more attention. A few teachers mentioned that lessons should be longer than the usual, while others requested shorter ones. One teacher explained this contradiction in more detail:

I thought it was naive to think that a school timetable could also be followed in online teaching. So that I could transfer a full-time job to a full-on online teaching job.

Overall, needs in this third theme were directed towards the system and management of schools, including a need for more guidance, while others were concerned with the collaboration with colleagues, including a need for help and support. Participants reflected on the educational system by expressing needs concerning learning goals and expectations.

#### 4.4.1. Miscellaneous

Certain needs expressed by teachers did not fit in one of the three themes above. Some teachers mentioned that they needed more time to adapt to the new educational situation. Others asked for more clarity from the government, for example, regarding decisions for the educational section and a plan for when and how reopening schools. Lastly, a few teachers expressed that they wanted to just go back to the old situation (i.e., before COVID-19) without reasoning why.

## 5. Discussion

The purpose of this exploratory study was to identify the perceived challenges and needs of Dutch teachers who had to facilitate emergency remote teaching (ERT) during the first lockdown due to the COVID-19 pandemic. By means of a thematic coding approach, we identified three clusters of needs, namely (1) *teachers' work-life balance and working from home* (e.g., having fixed working hours or juggling different responsibilities), (2) *teaching and interaction with students and parents* (e.g., contact with students), and (3) *school management and colleagues* (e.g., better school management and a clear work system). Half of the teachers reported one need, while the other half reported two or more needs. Interestingly, the frequency of needs was equally divided among the three identified themes.

The categorization of needs in themes resulted in a comprehensive picture of teachers' needs and allowed for different domains in which these needs emerged. For example, a teacher could report both a need for more contact with others (aiming at their well-being) and a need for a better school management (aiming at the system they work in). As such, our results extend findings from previous studies (e.g., [Ferri et al., 2020](#); [Kundu & Bej, 2021](#); [van der Spoel et al., 2020](#)) that assessed the challenges teachers experienced with regard to providing ERT to their students, as these studies often had a narrow focus on either technical or pedagogical or social challenges of online teaching. In our study, teachers also reported some of these needs found in the literature, i.e., technical difficulties or worries about vulnerable students, which strengthens the validity and trustworthiness. Yet, by exploring a broader scope of needs experienced among teachers, the results of the present study expand the insights of previous work. By also clarifying teachers' needs related to their psychological well-being, results may point out ways of how to support teachers in the future for adapting to such sudden changes in the educational domain.

### 5.1. Relationship with (theoretical) frameworks and earlier work

With the sudden switch to ERT, we observed challenges and needs that occurred uniquely to the situation due to the COVID-19 pandemic or accentuate previous issues and problems. First, teachers advocated the need for adjustment of learning outcome expectations for students, but also for teachers themselves. With schools remaining closed or operating on an adjusted online teaching mode, previously planned curricula and learning objectives were challenging to achieve. Whereas teachers call for society to worry less about students falling behind and to adjust the original curriculum,

the Dutch Inspection for Education reports that school managements believe that learning deficits of students are highly worrisome ([Dutch Ministry of Education, Culture and Research, 2020](#)). Second, teachers expressed that they wanted more time and room for smaller classes. This has been called for before ([CPB Netherlands Bureau for Economic Policy Analysis, 2016; 2020](#)), but especially in the context of teaching remotely, this became even more pressing. Teachers furthermore longed for more possibilities for one-to-one contact and supervision of students, which relates to the expressed worries for the well-being of vulnerable students. This was also reported by [Kim and Asbury \(2020\)](#). It seems that teachers not only want to teach their students, but also feel responsible for students' well-being and their learning process. The lockdown has shown that school is more than just a place to learn. Educational facilities offer an environment where socialization among students and teachers takes place and where room can be created for social and emotional learning and well-being of students in addition to the curriculum ([Colao et al., 2020](#)).

#### 5.1.1. COVID-19 impact on teachers' well-being and interactions

Needs that clustered within the first two themes, *teachers' work-life balance and working from home* and *teaching and interaction with students and parents* can be related to two well-known and frequently used models in the field, namely the revised Job Demands-Resources model (JD-R model; [Schaufeli & Bakker, 2004](#)) and the Self-Determination Theory (SDT; [Ryan & Deci, 2000](#)). In line with the JD-R model, the results of the current study identified different needs that relate to job demands. These include, for example, having to deal with a higher workload and juggling different responsibilities. At the same time, teachers identified several job resources that they experienced as necessary, including help from colleagues, reassurance and feedback, and more support from their school management.

According to the SDT ([Deci & Ryan, 2013](#)), humans posit basic psychological needs, including the need for autonomy, relatedness, and competence. Our results highlight teachers' need for relatedness, i.e., maintaining close, safe and satisfying connections and feeling a sense of belonging. Before the pandemic, teachers, students, and parents met each other on a daily basis at school and in the classroom, fostering connection by means of formal and informal contact. However, this was not possible anymore, leaving teachers and students at a physical, but also emotional distance. Feeling the necessity of staying in contact with students, parents, as well as colleagues, was one of the most frequently identified needs, which mirrors how crucial it is to nurture interaction, even at a distance. Research has suggested that even when perceived as strenuous and requiring different pedagogical approaches, creating a sense of community in online learning environments is possible ([Rovai, 2002](#)).

Concerning the need for autonomy, several teachers reported a need for freedom in how to teach remotely. This is in-line with outcomes by [Kundu and Bej \(2021\)](#), who also found that teachers wanted to be able to freely choose how to facilitate their online teaching during the lockdown. Interestingly though, in our study, we found a much larger group of teachers who wanted a more and better school management and more transparent working systems. It could be that especially during the first weeks of the lockdown, guidance from management teams was of priority, as a mean to deal with the uncertainty of the situation. This might lessen over time, as teachers get familiar with the possibilities of online teaching and adapt to the circumstances.

With regard to a need for competence (sense of efficacy and mastery), teachers reported issues related to their knowledge and competence concerning online or hybrid modes of teaching and a



need to have more knowledge of online education practices, how to validly assess students and motivating students properly in an online environment.

The needs related to teachers' digital competencies, clustered within the theme *teaching and interaction with students and parents*, reflect the suboptimal level of digital readiness and preparedness of many teachers and schools. In line with the SDT, a need for competence with regard to their knowledge of teaching in an online or hybrid mode becomes apparent. However, some schools seemed to be better prepared than others, as several teachers in our study indicated not feeling a need for improvement, as their school handled the transition appropriately. Needs related to digital competencies can be related to an essay published by the UNESCO (2020a). Here, it is stated that the effectiveness of distance learning is conditioned by the level of preparedness, including the following perspectives: technological readiness (i.e., having the technological capacities of digital learning platforms), content readiness (i.e., accessibility to teaching and learning materials), pedagogical and home-based learning support readiness (i.e., preparedness of teachers to design and deliver online learning (see also Sailer et al., 2021), and support of parents and caregivers), and monitoring and evaluation readiness (i.e., tracking the access and engagement, assessing learning goals). Stipulating the support and training for teachers, but also for students, parents and caregivers, with regard to their digital literacy and readiness is of high importance.

## 5.2. Strengths and limitations

A major strength of this study is the inclusion of a large group of teachers that reported on their needs, which allowed us to observe and categorize a vast number and broad range of needs. The study also has ecological validity as it took place during a global crisis (van der Spoel et al., 2020). Furthermore, we increased the external validity of the study by including all educational sectors, i.e., from primary school up to vocational educational teachers. Yet, as we focused on Dutch teachers working in the educational system in the Netherlands, results cannot automatically be generalized and applied to teachers in other countries and educational systems. Another limitation of the study is that it has a cross-sectional design and we were therefore not able to monitor possible changes in teachers' report of challenges and need throughout the crisis over a longer period of time. Therefore, future research is needed to re-evaluate teachers' current perceived challenges and needs, and late consequences of the COVID-19 related measures and lockdowns. Lastly, as some answers could not be analyzed, it might be that for some teachers, the question used for this study was not always interpreted or understood as we intended. This may also have affected the answers that we did analyze as teachers may have provided answers with another question in mind.

## 6. Future research and practical implications

The pandemic induced a real-life laboratory of how educators handle and adapt to ERT. Considering all studies, it becomes apparent that, in order to support teachers appropriately, different approaches are needed. First, this study reports on several themes that need to be considered for the professional development of teachers, with regard to learning and school digitization processes, including access to best teaching practices, courses in online education, ICT-support, and proper software for online education (UNESCO, 2020b; Zimmer & Matthews, 2022). To implement this in a sustainable and feasibly way, also in the long run, the input of teachers is necessary. Related to the need for autonomy, Power and Goodnough (2018) argued that professional development and learning approaches need to focus on teachers' autonomous

motivation and acknowledging teachers' inner strength in order to fully engage them. This is reached when teachers are seen as agents and actively and collaboratively included when designing such training (Korthagen & Vasalos, 2008, March 23–28; van Veen et al., 2012).

Second, the closure of educational facilities and reported problems related to this closure show that schools are more than institutions for knowledge transfer (Biesta, 2018). Therefore, shifts need to be made that allow for more room for social-emotional development, focusing on the well-being of students as well as of teachers. For this, teachers need additional professional development, with regard to social-emotional learning and positive behavioral support, in order to be able to meet the needs of the students. More room, for instance, by supervision, in the curricula may need to be considered. In addition, more focus should be on fostering social cohesion among teachers (Schaack, Le & Stendron, 2020).

Third, more attention should be paid to the psychological well-being of teachers and the need for adequate self-care. Teaching from one's own home makes it even more difficult to balance and keep work and private life separate. Specific working hours and agreements among teachers, students, and parents should be made, so teachers can regain the feeling of closing their classroom door behind them at the end of the day, as they do when teaching at the school itself. Positive effects on the psychological well-being and stress levels have also been suggested in teachers who followed the training of mindfulness and self-compassion (e.g., Beshai et al., 2015; Jennings et al., 2017; Jazaieri et al., 2012; Moè and Katz (2020), bibliotherapy-based stress management training (Eddy et al., 2022) or Affect Regulation Training (ART; Berking & Whitley, 2014). Following such trainings and practicing short exercises regularly might help teachers to keep their balance in these challenging times and to deal better with the mental burden they may experience (Mansfield et al., 2016). Also, proper supervision and leadership is necessary. To prevent conflicts between work and family, Gu et al. (2020) advise that teaching organizations need to invest more time and effort in creating a family-friendly atmosphere, where teachers can openly discuss family burdens and needs. This also means that supervisors need to be trained in order to properly identify and deal with work-family related issues and problems (Gu et al., 2020).

As this study focused on clarifying what teachers need to provide education in an online format, future research is needed towards teachers' overall adaptation to this unique situation. For example, insights into the positive aspects of the situation can inform different stakeholders about various factors in education where the change is perceived positively and would allow for a comparison with struggles, needs, and negative aspects of the situation. This study contributes to the field of teaching and teacher education by providing valuable insights into teachers' experiences with ERT during the first phase of the COVID-19 pandemic, highlighting what is essential to teachers in terms of their work functioning and psychological well-being. Looking forward, some facets (e.g., online teaching, dealing with the pandemic's impact) will remain in the teaching profession. The findings of this study strengthen essential aspects in successful teaching (e.g., visibility of students), while new insights from this unique situation give direction to newly formed educational settings (e.g., adjustments of learning goals). Taken together, these strengthened and new findings should be used by policymakers, researchers, and teachers to shape their daily teaching practices, acknowledging the primacy of teachers' well-being.

## Appendix A. Supplementary data

Supplementary data to this article can be found online at <https://doi.org/10.1016/j.tate.2022.103815>.

## References

- Allen, J., Rowan, L., & Singh, P. (2020). Teaching and teacher education in the time of COVID-19. *Asia-Pacific Journal of Teacher Education*, 48(3), 233–236. <https://doi.org/10.1080/1359866X.2020.1752051>
- Almazova, N., Krylova, E., Rubtsova, A., & Odinokaya, M. (2020). Challenges and opportunities for Russian higher education amid COVID-19: Teachers' perspective. *Education Sciences*, 10(12), 368. <https://doi.org/10.3390/educsci10120368>
- Aperribai, L., Cortabarria, L., Aguirre, T., Verche, E., & Borges, Á. (2020). Teacher's physical activity and mental health during lockdown due to the COVID-2019 pandemic. *Frontiers in Psychology*, 11. <https://doi.org/10.3389/fpsyg.2020.577886>
- Berking, M., & Whitley, B. (2014). *Affect regulation training: A practitioners' manual*. Springer.
- Beshai, S., McAlpine, L., Weare, K., & Kuyken, W. (2015). A non-randomised feasibility trial assessing the efficacy of a mindfulness-based intervention for teachers to reduce stress and improve well-being. *Mindfulness*, 7(1), 198–208. <https://doi.org/10.1007/s12671-015-0436-1>
- Biesta, G. (2018). The duty to resist: Redefining the basics for today's schools. In B. Heys, M. Matthes, & L. Pulkkinen (Eds.), *Vol. 7. Improving the quality of childhood in Europe* (pp. 19–32). Alliance for Childhood European Network Group.
- Blömeke, S., Houang, R. T., Hsieh, F.-J., & Wang, T.-Y. (2017). Effects of job motives, teacher knowledge and school context on beginning teachers' commitment to stay in the profession: A longitudinal study in Germany, Taiwan and the United States. In M. Akiba, & G. K. LeTendre (Eds.), *International handbook of teacher quality and policy*. Routledge.
- Braun, V., & Clarke, V. (2006). Using thematic analysis in psychology. *Qualitative Research in Psychology*, 3(2), 77–101. <https://doi.org/10.1191/1478088706qp0630a>
- Çınar, M., Kıcı, M., & Demir, Ö. (2021). A snapshot of the readiness for e-learning among in-service teachers prior to the pandemic-related transition to e-learning in Turkey. *Teaching and Teacher Education*, 107, Article 103478. <https://doi.org/10.1016/j.tate.2021.103478>
- Colao, A., Piscitelli, P., Pulimeno, M., Colazzo, S., Miani, A., & Giannini, S. (2020). Rethinking the role of the school after COVID-19. *The Lancet Public Health*, 5(7), e370. [https://doi.org/10.1016/S2468-2667\(20\)30124-9](https://doi.org/10.1016/S2468-2667(20)30124-9)
- Coyte, Y., Yañez, L., & Verdú, M. (2010). The impact of the interactive whiteboard on the teacher and children's language use in an ESL immersion classroom. *System*, 38(4), 614–625. <https://doi.org/10.1016/j.system.2010.10.002>
- CPB Netherlands Bureau for Economic Policy Analysis. (2016). *Kansrijk onderwijsbeleid*. <https://www.cpb.nl/sites/default/files/omnidownload/CPB-Boek-25-Kansrijk-Onderwijsbeleid.pdf>
- CPB Netherlands Bureau for Economic Policy Analysis. (2020). *Kansrijk onderwijsbeleid—Update 2020* (Vol. 89). <https://www.cpb.nl/sites/default/files/omnidownload/CPB-Kansrijk-onderwijsbeleid-update-2020.pdf>
- Dabrowski, A. (2020). Teacher wellbeing during a pandemic: Surviving or thriving? *Social Education Research*, 2, 35–40. <https://doi.org/10.37256/ser.212021588>
- Deci, E., & Ryan, R. M. (2013). *Intrinsic motivation and self-determination in human behavior*. Springer Science & Business Media.
- Dutch Ministry of Education, Culture and Research. (2020, November 24). *Onderwijs op afstand tijdens COVID-19: Derde meting (Oktober 2020)*. <https://www.onderwijsinspectie.nl/onderwerpen/afstandsonderwijs-tijdens-covid-19/derde-meting>
- Eddy, C. L., Herman, K. C., Huang, F., & Reinke, W. M. (2022). Evaluation of a bibliotherapy-based stress intervention for teachers. *Teaching and Teacher Education*, 109, Article 103543. <https://doi.org/10.1016/j.tate.2021.103543>
- Ferri, F., Grifoni, P., & Guzzo, T. (2020). Online learning and emergency remote teaching: Opportunities and challenges in emergency situations. *Societies*, 10(4), 86. <https://doi.org/10.3390/soc10040086>
- Gudmundsdottir, G. B., & Hatlevik, O. E. (2017). Newly qualified teachers' professional digital competence: Implications for teacher education. *European Journal of Teacher Education*, 41(2), 214–231. <https://doi.org/10.1080/02619768.2017.1416085>
- Gu, Y., You, X., & Wang, R. (2020). Job demands and emotional labor as antecedents of female preschool teachers' work-to-family conflict: The moderating role of job resources. *International Journal of Stress Management*, 27(1), 23–34. <https://doi.org/10.1037/str0000130>
- Hadar, L. L., Ergas, O., Alpert, B., & Ariav, T. (2020). Rethinking teacher education in a VUCA world: Student teachers' social-emotional competencies during the COVID-19 crisis. *European Journal of Teacher Education*, 43(4), 573–586. <https://doi.org/10.1080/02619768.2020.1807513>
- Hodges, C., Moore, S., Locke, B., Trust, T., & Bond, A. (2020, March 27). The difference between emergency remote teaching and online learning. *EDUCAUSE Review | EDUCAUSE*. <https://er.education.edu/articles/2020/3/the-difference-between-emergency-remote-teaching-and-online-learning>
- Jazaieri, H., Jinpa, G. T., McGonigal, K. M., Rosenberg, E. L., Finkelstein, J., Simon-Thomas, E. R., Cullen, M. D., Doty, J. R., Gross, J. J., & Goldin, P. R. (2012). Enhancing compassion: A randomized controlled trial of a compassion cultivation training program. *Journal of Happiness Studies*, 14(4), 1113–1126. <https://doi.org/10.1007/s10902-012-9373-z>
- Jennings, P. A., Brown, J. L., Frank, J. L., Doyle, S., Oh, Y., Davis, R., Rasheed, D., DeWeese, A., DeMauro, A. A., Cham, H., & Greenberg, M. T. (2017). Impacts of the CARE for Teachers program on teachers' social and emotional competence and classroom interactions. *Journal of Educational Psychology*, 109(7), 1010–1028. <https://doi.org/10.1037/edu0000187>
- Kim, L. E., & Asbury, K. (2020). 'Like a rug had been pulled from under you': The impact of COVID-19 on teachers in England during the first six weeks of the UK lockdown. *British Journal of Educational Psychology*, 90(4), 1062–1083. <https://doi.org/10.1111/bjep.12381>
- Klassen, R. M., & Chiu, M. M. (2011). The occupational commitment and intention to quit of practicing and pre-service teachers: Influence of self-efficacy, job stress, and teaching context. *Contemporary Educational Psychology*, 36(2), 114–129. <https://doi.org/10.1016/j.cedpsych.2011.01.002>
- Korthagen, F., & Vasalos, A. (2008, March 23–28). 'Quality from within' as the key to professional development [Paper presentation]. New York, New York, United States: Annual Meeting of the American Educational Research Association.
- Kundu, A., & Bej, T. (2021). COVID 19 response: An analysis of teachers' perception on pedagogical successes and challenges of digital teaching practice during new normal. *Education and Information Technologies*, 26(6), 6879. <https://doi.org/10.1007/s10639-021-10503-5>. -6879.
- Lincoln, Y. S., & Guba, E. G. (1985). *Naturalistic inquiry*. SAGE.
- Madigan, D. J., & Kim, L. E. (2021). Towards an understanding of teacher attrition: A meta-analysis of burnout, job satisfaction, and teachers' intentions to quit. *Teaching and Teacher Education*, 105, Article 103425. <https://doi.org/10.1016/j.tate.2021.103425>
- Mansfield, C. F., Beltman, S., Broadley, T., & Weatherby-Fell, N. (2016). Building resilience in teacher education: An evidenced informed framework. *Teaching and Teacher Education*, 54, 77–87. <https://doi.org/10.1016/j.tate.2015.11.016>
- Moè, A., & Katz, I. (2020). Self-compassionate teachers are more autonomy supportive and structuring whereas self-derogating teachers are more controlling and chaotic: The mediating role of need satisfaction and burnout. *Teaching and Teacher Education*, 96, Article 103173. <https://doi.org/10.1016/j.tate.2020.103173>
- OECD. (2020, March 23). *TALIS 2018 results (Volume II): Teachers and school leaders as valued professionals*. <https://www.oecd.org/education/talis-2018-results-volume-ii-19cf08df-en.htm>
- Power, K., & Goodnough, K. (2018). Fostering teachers' autonomous motivation during professional learning: A self-determination theory perspective. *Teaching Education*, 30(3), 278–298. <https://doi.org/10.1080/10476210.2018.1465035>
- Pressley, T. (2021). Factors contributing to teacher burnout during COVID-19. *Educational Researcher*, 50(5), 325–327. <https://doi.org/10.3102/0013189X211004138>
- Rovai, A. P. (2002). Building sense of community at a distance. *International Review of Research in Open and Distance Learning*, 3(1). <https://doi.org/10.19173/irrodl.v3i1.79>
- Ryan, R. M., & Deci, E. L. (2000). Self-determination theory and the facilitation of intrinsic motivation, social development, and well-being. *American Psychologist*, 55(1), 68–78. <https://doi.org/10.1037/0003-066X.55.1.68>
- Sailer, M., Murböck, J., & Fischer, F. (2021). Digital learning in schools: What does it take beyond digital technology? *Teaching and Teacher Education*, 103, Article 103346. <https://doi.org/10.1016/j.tate.2021.103346>
- Schaack, D. D., Le, V.-N., & Stedron, J. (2020). When fulfillment is not enough: Early childhood teacher occupational burnout and turnover intentions from a job demands and resources perspective. *Early Education & Development*, 31(7), 1011–1030. <https://doi.org/10.1080/10409289.2020.1791648>
- Schaufeli, W. B., & Bakker, A. B. (2004). Job demands, job resources, and their relationship with burnout and engagement: A multi-sample study. *Journal of Organizational Behavior*, 25(3), 293–315. <https://doi.org/10.1002/job.248>
- Schaufeli, W. B., & Taris, T. W. (2014). A critical review of the Job Demands-Resources model: Implications for improving work and health. In G. F. Bauer, & O. Hämmig (Eds.), *Bridging occupational, organizational and public health* (pp. 43–68). Springer. [https://doi.org/10.1007/978-94-007-5640-3\\_4](https://doi.org/10.1007/978-94-007-5640-3_4)
- Skaalvik, E. M., & Skaalvik, S. (2011). Teacher job satisfaction and motivation to leave the teaching profession: Relations with school context, feeling of belonging, and emotional exhaustion. *Teaching and Teacher Education*, 27(6), 1029–1038. <https://doi.org/10.1016/j.tate.2011.04.001>
- van der Spoel, I., Noroozi, O., Schuurink, E., & van Ginkel, S. (2020). Teachers' online teaching expectations and experiences during the COVID19-pandemic in The Netherlands. *European Journal of Teacher Education*, 43(4), 623–638. <https://doi.org/10.1080/02619768.2020.1821185>
- Stachteas, P., & Stachteas, C. (2020). The psychological impact of the COVID-19 pandemic on secondary school teachers. *Psychiatriki*, 31(4), 293–301. <https://doi.org/10.22365/jpsych.2020.314.293>
- Stiftung Deutschland GmbH, V. (2020). *Schule auf Distanz*. [https://www.vodafone-stiftung.de/wp-content/uploads/2020/05/Vodafone-Stiftung-Deutschland-Studie\\_Schule\\_auf\\_Distanz.pdf](https://www.vodafone-stiftung.de/wp-content/uploads/2020/05/Vodafone-Stiftung-Deutschland-Studie_Schule_auf_Distanz.pdf)
- Taylor, S. (2019). *The psychology of pandemics: Preparing for the next global outbreak of infectious disease*. Cambridge Scholars Publishing.
- UNESCO. (2020a). *Adverse consequences of school closures*. <https://en.unesco.org/covid19/educationresponse/consequences>. May 13.
- UNESCO. (2020b). *UNESCO COVID-19 education response - education sector issue notes*. multi <https://unesdoc.unesco.org/ark:/48223/pf0000373305/PDF/>

373305eng.pdf.

van Veen, K., Zwart, R. C., & Meirink, J. (2012). What makes teacher professional development effective? A literature review. In M. Kooy, & K. van Veen (Eds.), *Teacher learning that matters: International perspectives* (pp. 3–21). Routledge.

Zimmer, W. K., & Matthews, S. D. (2022). A virtual coaching model of professional development to increase teachers' digital learning competencies. *Teaching and Teacher Education*, 109, Article 103544. <https://doi.org/10.1016/j.tate.2021.103544>