

The same, but different? Learning activities, perceived learning success, and social support during the practical term of teacher education in times of COVID-19

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Abstract:

The practical phases of teacher education programs are of high relevance for pre-service teachers and their professional development. The challenges posed by the COVID-19 pandemic and the resulting changes in schools might have affected pre-service teachers' learning experiences during the long-term internships of initial teacher education programs in various ways. This article focuses on pre-service teachers' experiences during their practical term during the COVID-19 pandemic. We will address three questions: first, how did pre-service teachers experience different kinds of learning activities in school (e.g., the delivery of and reflection on teaching); second, how did they perceive social support and their learning success associated with the implementation of learning activities in different areas of teaching; and third, which types of learning activities and social support were predictive of their perception of learning success? To this end, we will present findings from a cross-sectional survey which was conducted in the academic year 2020/21. A total of 164 pre-service teachers from different universities in North Rhine-Westphalia, Germany, participated in the online survey after having completed their practical term. The results of the study illustrate heterogeneous experiences concerning the preparation and implementation of remote teaching scenarios during the internship. Despite changes in schools due to the pandemic, pre-service teachers perceived a high level of social support and learning success during their practical term. Own teaching experiences and social support from mentors have proved to be relevant predictors for the perception of learning success.

Keywords:

COVID-19, practical terms during teacher education, learning experiences, online survey

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INTRODUCTION

During the practical phases of teacher education programs, pre-service teachers experience the demands, challenges, and difficulties, as well as the joys of the teaching profession. Therefore, practical phases are considered to have a high impact on the development of professional competencies of pre-service teachers (Arnold et al., 2014; Cohen et al., 2013; Kidd & Murray, 2020; Lawson et al., 2015). However, the development of competencies during these practical phases is not an automatic process. The yield of the internship in terms of professional development depends on pre-service teachers' uptake of different opportunities to learn, i.e. their implementation of learning activities in terms of teaching practice activities and reflection, and on the contextual and institutional conditions of the practical term, e.g. school type and intensity of social support (König & Rothland, 2018; Kunter et al., 2013; Tabachnick & Zeichner, 1987).

Due to the outbreak of COVID-19 in the spring of 2020, measures were taken worldwide to contain the spread of coronavirus, and the education sector was not exempt (Education International, 2020; Flores & Gago, 2020). The repeated closure of educational institutions due to the pandemic—for the first time in the spring and then again in the fall of 2020—required the reorganization of (high) school teaching and learning. This process posed challenges for all stakeholders at the beginning of the pandemic and also during its progression. In Germany, the impact of the pandemic on education, in particular on teachers (e.g., Eickelmann & Drossel, 2020; König et al., 2020b) and students (e.g., Hammerstein et al., 2021; Tannert & Gröschner, 2021), has received special attention, whereas higher education has been less of a focus (Hahn et al., 2021). Student surveys conducted during the first lockdown were intended to provide a general insight into the given learning situation at the respective universities. Related research focused especially on students' evaluation of remote teaching, the availability of technological infrastructures and media equipment, and the perceived advantages and disadvantages of digitalized teaching and learning settings (e.g., Karapanos et al., 2021; Zierer, 2020). In contrast, little is known about the experiences of pre-service teachers completing the practical phases of teacher education during the COVID-19 pandemic.

This article presents the findings of an explorative, cross-sectional survey study conducted with pre-service teachers from different universities in North Rhine-Westphalia, Germany, who completed their long-term internship in the academic year 2020/21. The study examines the implementation of pre-service teachers' learning activities, the social support and the learning success related to the implementation of various learning activities. For this purpose, participants were asked which different kinds of activities in terms of the delivery of and reflection on teaching they had conducted during their practical term (learning activities), how they perceived social support from mentors and peers (social support) and in which school practice areas they were able to improve their competencies (learning success). It can be assumed that the partial school closures and the remote teaching

situation due to the COVID-19 pandemic led to changes in the experiences that pre-service teachers made during their long-term internships. Accordingly, this present study focuses on the specific learning experiences of pre-service teachers during their practical term during the pandemic-related lockdown in German schools in the fall of 2020.

Teaching and learning in times of COVID-19

COVID-19 strongly affected education settings worldwide in many ways, including the sudden transition from face-to-face instruction to remote teaching (Education International, 2020; Carrillo & Flores, 2020). Since the beginning of the pandemic, a large number of field reports and guidelines have been produced concerning the design of remote teaching scenarios, especially in higher education (e.g., Bao, 2020; Czerniewicz et al., 2020; Ferdig et al., 2020; Lowenthal et al., 2020; Moorhouse, 2020; Toquero, 2020; Zhu & Liu, 2020). Various surveys were conducted with university students and teachers, addressing their assessments of technical equipment, the quality of remote teaching, and the need for support (e.g., Almazova et al., 2020; Göbel et al., 2021; Karapanos et al., 2021; Kaqinari et al., 2021; Watermeyer et al., 2020; Zierer, 2020). Taken together, the findings illustrate that the digitalized courses offered during the first lockdown in the spring of 2020 were implemented mostly successfully and that various potential benefits of the transition to remote teaching were perceived, e.g., flexibility and autonomy in students' learning as well as the development of digital competencies. Nevertheless, the transition to remote teaching was a complex and stressful experience for many educators and students (see Göbel et al., 2021; Kaqinari et al., 2021; Kidd & Murray, 2020). Students in particular criticized the increased workload and the lack of contact with university teachers and fellow students (e.g., Karapanos et al., 2021; Zierer, 2020).

In schools, efforts to deal with the pandemic ranged from implementing hygiene precautions and wearing face masks to reducing the size of learning groups and switching from face-to-face to distance learning formats (Blume et al., 2021; Fickermann & Edelstein, 2021). It is possible that the challenges posed by the temporary school lockdown and the accompanying digitalization of teaching and learning in schools provided opportunities for redesigning traditional practices of instruction (Darling-Hammond & Hyler, 2020; Eickelmann & Gerick, 2020; Huber et al., 2020). However, recent findings illustrate that the changed circumstances significantly affected interactions between students and teachers, the design of instruction, and students' learning experiences. Even though most teachers were generally successful in maintaining communication with their students by, for example, introducing learning content and providing feedback remotely (Eickelmann & Drossel, 2020; König et al., 2020b), further studies found evidence of a negative effect of pandemic-related school closures on student achievement (Hammerstein et al., 2021) as well as students' emotions (Tannert & Gröschner, 2021). These findings emphasize the importance of good student–teacher relationships and communication for students' learning success and motivation in times of school closures, especially for socially

disadvantaged students (Eickelmann & Drossel, 2020; Hammerstein et al., 2021; Tannert & Gröschner, 2021).

At the beginning of the pandemic, empirical findings regarding schools in German-speaking countries revealed a high level of variation in the availability of digital resources, indicating that schools were likely to differ greatly in terms of their equipment for digital learning (Eickelmann & Drossel, 2020; Huber et al., 2020). The lack of equipment makes it difficult to prepare for and use digital tools for the virtual classroom and to maintain (remote) social contact with students (König et al., 2020b). This is true especially for beginning teachers, who usually have less experience of remote teaching or of general routines for planning, designing, and delivering distance-learning formats. Against this background, it is not surprising that in a qualitative survey of novice teachers, the respondents considered digitally supported distance learning during the school lockdown in the spring of 2020 as a substitute rather than a viable alternative for the future (Caruso & Bruns, 2021).

The pandemic confronted not only teachers and students with a novel situation, but also those pre-service teachers who were completing the practical phases of their initial teacher education program during this period (Flores & Gago, 2020; Zierer, 2020). For pre-service teachers, the pandemic presented a completely unknown setting for teaching and learning. The findings of an explorative study by Hase and Kuhl (2021), which focused on pre-service teachers' experiences during their long-term internship during the first school lockdown in the spring of 2020, show that pre-service teachers were involved in school and teaching processes to very different degrees. Although some positive learning experiences were reported, most pre-service teachers had fewer opportunities to teach and to reflect on their lessons with their school and university mentors, which in turn impacted the experiences gained during their long-term internship (Hase & Kuhl, 2021). Due to the temporary school closure, pre-service teachers lacked face-to-face interactions with mentors and their students (Caruso & Bruns, 2021). Therefore, opportunities for learning from experienced teachers through classroom observation or by attending conferences were rather limited. Nevertheless, the surveyed pre-service teachers also gained valuable impressions of developments at their schools during the pandemic and thus complemented the perspectives of teachers, students, parents, and other school actors (Caruso & Bruns, 2021; Hase & Kuhl, 2021).

Developing professional competence during the practical phases of teacher education

The requirements of the teaching profession can be described as diverse and complex. The planning and delivery of teaching, including dealing with students in a way that promotes learning, as well as the reflection on and evaluation of teaching are considered core tasks (Kultusministerkonferenz, 2004). In order to be able to meet these demands, teachers require professional development of the corresponding competencies (Baumert &

Kunter, 2013; Desimone, 2009). Theoretical modeling of professional competence focuses primarily on those aspects that contribute to the success of teaching-learning processes in the classroom (König, 2016). The underlying assumption is that professional competence manifests in teaching performance (Blömeke et al., 2015), and that teachers with greater competence on average act more appropriately across different teaching situations than those with lesser competence. In German research, a widely accepted model for describing professional competence is the COACTIV model by Baumert and Kunter (2013). According to Weinert (2001), the theoretical construct of competence combines the prerequisites required for fulfilling the demands of a particular professional position; these prerequisites include cognitive as well as metacognitive individual dispositions. Consequently, the COACTIV model (Baumert & Kunter, 2013) focuses on the cognitive (i.e., knowledge and skills) as well as the motivational aspects of competence and self-regulatory orientations. In contrast, the competence model by Blömeke, Gustafsson and Shavelson (2015; see also Blömeke & Kaiser, 2017) suggests that beyond cognitive and affective-motivational dispositions, the professional performance of teachers is determined by situation-specific cognitive skills relating to the ability to perceive and interpret relevant classroom events and to decide how to react appropriately to these events. These situation-specific abilities (perception, interpretation, and decision-making) represent factors that mediate between individual dispositions and performance (Blömeke & Kaiser, 2017).

The practical phases of teacher education programs are considered as opportunities for supporting the development of the professional competence of pre-service teachers early in their professional careers (Arnold et al., 2014; Cohen et al., 2013; Klassen & Durksen, 2014; Tabachnick & Zeichner, 1987). During the practical phases, pre-service teachers experience school as a system and a workplace; they experience a wide range of teaching-related learning activities (e.g., the planning and delivery of teaching) and interactions with students and teachers that may increase their knowledge and skills. Accordingly, the implementation of different kinds of learning activities and the perceived learning success associated with these activities might occur in many different aspects of practice (Borko, 2004; Caires et al., 2012; Desimone, 2009). German research on the effectiveness of practical experiences in initial teacher education programs points to increases in pre-service teachers' self-assessed competencies. These increases are particularly evident in the area of teaching, i.e., the planning and delivery of lessons, as well as in pre-service teachers' career orientation and the development of their role as teachers (e.g., Festner et al., 2018; Moser & Hascher, 2000; Schubarth et al., 2014). International findings underline the potential impact of school-based internships on the development of pre-service teachers' competencies such as knowledge, teaching skills, or self-efficacy (e.g., Caires et al., 2012; Cohen et al., 2013; Klassen & Durksen, 2014).

The present study was conducted within the framework of pre-service teachers' long-term internship in the German teacher education program. The internship is intended to enable pre-service teachers to plan, implement, and reflect on fundamental elements of

teaching and learning, and to develop their own professional self-concept (MSW, 2010). The corresponding theory-based reflection on teaching and learning can be stimulated through the research activities that the pre-service teachers have to carry out during their internship as well as through their own teaching experiences. During their long-term internship, pre-service teachers are expected to teach 50 to 70 (partial) hours. It can therefore be assumed that pre-service teachers attribute a high degree of learning success regarding their professional development to the implementation of learning activities in teaching- and reflection-related areas of practice in particular. Recent findings from studies which focused on the effectiveness of this specific type of long-term internship for pre-service teachers' professional development show positive changes in self-assessed teaching skills (e.g., Caruso, 2019; Festner et al., 2018; Klingebiel et al., 2020; Kumschick et al., 2020). For pre-service teachers, the school-based part of the internship with its teaching-related learning activities is associated with a high learning effect (Mertens et al., 2018), while university-based learning opportunities appear to be less relevant for pre-service teachers' learning processes (Mertens et al., 2020; Schulz & Heinzl, 2020). In contrast, pre-service teachers' experiences of planning and conducting lessons as well as interacting with their students are attributed the highest importance for pre-service teachers' professional development, followed by classroom discussions with and classroom observations by experienced teachers (Bach, 2015; Mertens et al., 2020).

However, professional development does not solely occur through learning experiences; rather, a variety of different features of the practical term is important for pre-service teachers' learning success regarding their professional development (König & Rothland, 2018; Tabachnick & Zeichner, 1984). In particular, characteristics relating to how pre-service teachers utilize their internship to implement learning activities as well as external conditions like school type or the quality of social support seem to be relevant (Kunter et al., 2013). In long-term internships, the implementation of learning activities such as lesson planning, teaching, and reflecting on instruction are considered central goals. Empirical findings from Germany confirm the relevance of lesson planning and teaching for changes in pre-service teachers' affective-motivational competencies such as the enjoyment of school practice (Darge et al., 2018) and self-efficacy expectations (Seifert & Schaper, 2018). Smaller changes are evident concerning cognitive competencies, whereby an increase in pedagogical knowledge can be promoted above all through reflection-related activities during the practical term (König & Rothland, 2018; König et al., 2020a).

Furthermore, indicators of the structure of provision, such as the social support that pre-service teachers receive from mentors during their internship, are often highlighted in international literature as relevant for the effectiveness of the practical phases of teacher education (e.g., Beck & Kosnik, 2002; Clarke et al., 2014; Hobson et al., 2009; Izadinia, 2015; Lawson et al., 2015). Empirical findings from German studies hint at the importance of social support during the internship, especially from mentors at school, for pre-service teachers' development of pedagogical competencies like lesson planning or self-assessed competence

in teaching (Festner et al., 2018; Grassmé et al., 2018; Gröschner & Seidel, 2012). Furthermore, the perceived quality of social support from mentors is relevant for affective-motivational competencies such as the joy of school practice (Darge et al., 2018), for positive changes in self-efficacy expectations (Seifert & Schaper, 2018), and for intrinsic motivation (König et al., 2016). Pre-service teachers who report having received a higher amount of social support from a mentor improve their motivational competencies such as self-efficacy and intrinsic motivation for the teaching profession.

Research questions

For pre-service teachers in the practical phases of their teaching education program, learning may occur in many different aspects of practice (Borko, 2004; Caires et al., 2012). As our study is explorative in nature, it is based on a broad definition of learning and does not provide an analysis of specific forms of professional competencies. Instead, we assume that pre-service teachers themselves are able to assess the knowledge and skills that they have acquired and developed during their internship (see Allen & Wright, 2014; Moser & Hascher, 2000). Against this background, we focus on the reported implementation of different kinds of learning activities as well as the associated learning success as an indicator of pre-service teachers' perception of their professional development during their practical term.

The present study was conducted at a time when schools were still in the process of adapting to the ongoing COVID-19 pandemic. Owing to the partial school closures in the fall of 2020, during the academic year 2020/21 pre-service teachers spent less time in school and thus had fewer opportunities to conduct their lessons and to interact with students, mentors, or peers in face-to-face situations. However, it is possible that participating in the adaptation process and experiencing a mix of remote teaching, hybrid settings, and face-to-face instruction proved beneficial for pre-service teachers. It is conceivable that the changed circumstances resulting from the pandemic influenced pre-service teachers' learning activities and thus the yield of their practical term in terms of their learning success. For this reason, the following questions appear to be of particular interest:

1. How did pre-service teachers experience their learning activities, the social support and the situation of remote teaching in schools?
2. How did pre-service teachers perceive their learning success in different areas of teaching? How did they rate the overall effectiveness of their practical term?
3. What kind of learning activities and social support were predictive for pre-service teachers' perceived learning success in the practical term?

METHOD

Design and sample

Data collection was based on a cross-sectional study design using an online survey which was addressed to pre-service teachers from different universities in North Rhine-Westphalia. The survey was conducted using LimeSurvey, which is licensed by the University of Duisburg-Essen. Participants were recruited by the university lecturers who were supervising the practical term of their students' initial teacher education program. Lecturers were informed about the study by email and were asked to forward the invitation to participate in the online survey to pre-service teachers completing the long-term internship during the academic year 2020/21. The internship lasted from September 2020 to February 2021, during which time schools were completely or partially closed. The questionnaire was available from February 1 to February 28, 2021, which means it was administered *after* the practical term.

Our analysis is based on a sample of $n = 164$ pre-service teachers from nine North Rhine-Westphalian universities (127 female; 29 male; 8 unknown gender). Half of the respondents were aged between 24 and 26 years (50.6%), 33 respondents were between 27 and 29 years old (20.1%), another 33 reported being 23 years old or younger (20.1%), and 13 respondents were 30 years old or older (7.8%). 44 respondents completed their practical term at a primary school (26.8%), while 120 pre-service teachers were placed at secondary schools (73.2%).

Measures

The online survey focused on different learning activities regarding face-to-face instruction and remote teaching, the perceived social support from mentors and peers, and the perception of learning success in different areas of the teaching profession. The learning activities and learning success of pre-service teachers focused on the first objective of the practical term in North Rhine-Westphalia in Germany, namely, to plan, deliver, and reflect on instruction in a well-founded manner (MSW, 2010). Hence the pre-service teachers' perceptions of different kinds of learning activities and their perceived learning success during the practical term were surveyed using a questionnaire.

Learning activities. In order to examine the implementation of pre-service teachers' learning activities, 53 items were introduced with the question "Did you conduct the following activities during your practical term?" (König et al., 2014). Pre-service teachers had to answer with "yes" (coded as 1) or "no" (coded as 0), which resulted in scale scores ranging from 0 to 1. The respective questionnaire items were summarized by averaging to the scales *teaching* (31 items, $\alpha = .85$), *linking theories to situations* (11 items, $\alpha = .77$) and *reflecting on practice* (11 items, $\alpha = .58$).

Use of digital tools. In another section of the questionnaire, pre-service teachers were asked to indicate the extent to which digital tools were used for delivering remote teaching at their school. The extent of the use of digital tools was assessed using a four-point response scale (from 1 = "not at all" to 4 = "to a great extent"; Göbel et al., 2021). Furthermore, participants were asked to assess their experience of remote teaching in the school-based

part of their practical term, with answer choices ranging from “very positive and inspiring” to “mostly positive and encouraging”, “time-consuming”, “frustrating”, and lastly to “overwhelming” in line with Göbel et al. (2021).

Learning success and effectiveness. In accordance with Moser and Hascher (2000), learning success was surveyed as an indicator of pre-service teachers’ perception of their professional development based on the implementation of various learning activities in terms of planning and delivery of and reflection on their teaching during their practical term. For this purpose, participants were asked in which school practice areas (requirements and activities in the teaching profession) they learned something and were able to improve their competencies. The items reflected different areas such as lesson planning, delivering face-to-face instruction and remote teaching, evaluation and reflection on instruction, and interaction with students. These areas represent the main objectives of the practical term in North Rhine-Westphalia in Germany, namely to plan, deliver, and reflect on (parts of) lessons in a well-founded manner (MSW, 2010). A five-point scale was used to assess learning success in these areas (1 = very low; 5 = very high). The scale *learning success* was formed by averaging the nine questionnaire items; it shows sufficient internal consistency ($\alpha = .76$). In order to consider the overall yield of the practical term, participants were asked to assess the perceived *effectiveness* of their practical term (one item) using a seven-point scale (1 = no learning effect, 7 = high learning effect; Mertens et al., 2018), whereby a distinction was made between the learning effect of the university itself, supervision by mentors at the Center for Practical Teacher Training, and the school-based part of the practical term.

Social support. Given the relevance of social support for the effectiveness of practical phases during teacher education, *social support from mentors* (9 items, $\alpha = .97$, Kunter et al., 2017) and *social support from peers* (9 items, $\alpha = .94$, Kunter et al., 2017) were surveyed. At the item level, a distinction can be made between emotional, informational, and instrumental support. All scales and their characteristics are presented in Table 1.

Table 1

Scale descriptions and statistics

Scale	Item example	Range	Number of items	Cronbach’s α	Source
Teaching	I have told students how to self-evaluate their learning.	0–1	31	.85	König et al., 2014
Linking theories to situations	I have observed teaching methods that I have learned at my university course.	0–1	11	.77	König et al., 2014
Reflecting on practice	I have drawn conclusions for future teaching.	0–1	11	.58	König et al., 2014

Experience of remote teaching at school	How would you describe your experience of remote teaching?	1–6	1	-	Göbel et al., 2021
Use of digital tools at school	To what extent did you use the following tools for teaching at school?	1–4	9	.77	Göbel et al., 2021
Learning success	The role as a teacher (e.g., standing confidently in front of the class; leading the class; creating a positive learning atmosphere).	1–5	9	.76	Moser & Hascher, 2000
Social support from mentors/peers	I could talk to my mentors/peers about daily problems during the practical term.	1–4	9	.97/.94	Kunter et al., 2017

Data analysis

The collected data were descriptively analyzed at the level of individual items and at scale level. Multiple hierarchical linear regression was calculated to predict the perceived learning success in the practical term through learning experiences and social support. Stepwise regression equations were carried out to identify the respective explanatory power of the resulting models. In the analysis, the significance level was fixed at 5%. Given the exploratory nature of the present study, results with $p < .10$ are considered trends.

RESULTS

Experiences with learning activities, social support, and remote teaching

Concerning the different kinds of learning activities of pre-service teachers, the descriptive mean values signal the following picture: While pre-service teachers report quite extensive *teaching* activities (the mean value $M = 0.68$ illustrates that a third of all statements were answered with “yes”), the cognitively more demanding activities of *linking theories to situations* ($M = 0.61$) as well as *reflecting on practice* ($M = 0.58$) turn out to be somewhat more limited.

Despite the limitations due to the pandemic, the descriptive means illustrate a high overall level of perceived social support during the practical term. Perceived *social support from mentors* in school ($M = 3.39$, $SD = 0.74$) was rated slightly more positive than the perceived *social support from peers* ($M = 2.96$, $SD = 0.81$). Upon closer inspection, the descriptive means illustrate high values in the area of emotional and informational support ($M = 3.22$ – 3.52 , $SD = 0.59$ – 0.74), whereas instructional support (e.g., sharing of materials for instruction) came out rather low, especially support from peers ($M = 2.50$, $SD = 1.02$).

Given the temporary closures of schools in the fall of 2020, pre-service teachers' experiences of remote teaching were of particular interest to this study. The results illustrate ambivalent assessments of the implementation of remote teaching at school. The statement that remote teaching was a predominantly positive and encouraging experience received the most support among respondents ($n = 119$, 41.2%). At the same time, 33 of respondents (27.7%) perceived remote teaching as a complex or even frustrating experience that required an increased level of effort to master. Only a few respondents rated the experience of remote teaching as frustrating (8.4%) or overwhelming (5.9%) or, on the contrary, as nothing special (6.7%). For 12 respondents (10.1%), the experience of remote teaching was inspiring and even perceived as very positive.

With regard to the *use of digital tools* in the context of remote teaching, pre-service teachers most frequently used web conferencing systems (e.g., Zoom) for delivering their lessons (67.7%), followed by learning management systems platforms for delivering documents and bibliographies (49.7%), digital presentations (e.g., PowerPoint), YouTube videos, or other (48.4% each). Overall, a rather low level of utilization of different digital tools becomes apparent ($M = 2.09$, $SD = .71$). According to respondents, the reasons for not using digital tools for delivering their lessons were specifically: the great amount of time required to prepare digital teaching units (55.7%); the fact that digital tools were not used at the respective school (48.5%); or the fact that pre-service teachers did not feel sufficiently supported by school staff when preparing remote teaching using digital tools (43.9%).

Perceived learning success and the effectiveness of the practical term

In order to measure *learning success* during the practical term, pre-service teachers were asked in which areas of the teaching profession they had learned something during the practical term and were therefore able to improve their competencies. The descriptive findings indicate the following picture (see Table 2): In all fields of activity except for the items concerning remote teaching, learning success in terms of professional development was rated high ($M_{\text{items}} > 3.0$; $M_{\text{scale}} = 3.91$, $SD_{\text{scale}} = .60$). The highest average learning success was perceived with regard to the role as a teacher. In addition, activities related to the preparation and delivery of face-to-face instruction were experienced as areas in which pre-service teachers improved their competencies, whereas learning success related to remote teaching was rated lower. Regarding the perception of learning success in the context of remote teaching, the standard deviations as well as the number of missing values ($n = 38$) indicate divergent experiences by pre-service teachers in this specific area during the practical term and correspondingly ambivalent assessments.

In terms of the perceived effectiveness of the internship, further descriptive analyses highlight that the overall *effectiveness* of the practical term was rated as high ($M_{\text{scale}} = 5.03$, $SD_{\text{scale}} = 1.03$). Respondents attributed a high learning effect to the school-based part of the internship ($M = 6.40$, $SD = 1.09$), followed by supervision and support from mentors at the

Center for Practical Teacher Training ($M = 5.24$, $SD = 1.55$). In contrast, the university-based part of the practical term was attributed a lower learning effect ($M = 3.41$, $SD = 1.68$).

Table 2

Descriptive characteristic values for learning success in different fields of activity in school practice

Item	Learning success	
	<i>M</i>	<i>SD</i>
The role as a teacher (e.g., establish a positive relationship with the class; lead the class).	4.45	.80
General lesson planning (e.g., determine objectives and content for a series of lessons; become familiar with a topic).	4.18	.84
Preparation of face-to-face instruction (e.g., structuring the course of a lesson; use of social formats).	4.28	.83
Conducting face-to-face instruction (e.g., respond to and answer learner questions; activation and motivation of students).	4.41	.70
Preparation of remote teaching (e.g., content design for the digital learning environment; procuring and providing tools).	2.74	1.33
Conducting remote teaching (e.g., be available to answer questions; use digital media).	2.75	1.39
Lesson evaluation and follow-up (e.g., derive conclusions for future lesson design; self-critically analyze own lessons).	3.83	1.01
Interact with students (e.g., observing, analyzing, and addressing learning disruptions; providing feedback).	4.05	1.02
Getting to know a school and everyday school life (e.g., interact with teachers; supervising)	4.32	.91

References: Statistics based on a scale from 1 = *very low* to 5 = *very high* ($n = 150-161$).

Relevance of learning activities and social support for perceived learning success

In order to examine the relevance of specific learning activities on the one hand and social support on the other hand for perceived *learning success*, a multiple stepwise regression was conducted. The first model included only person-related variables ($F(2,142) = .506$, $p = .604$). Neither gender nor school type proved to be predictors, and the explanatory power was rather limited (see Table 3). Learning activities and the use of digital tools for remote teaching were integrated into the next regression model while controlling for person-related characteristics ($F(6,138) = 3.264$, $p = .005$). The explained variance increased significantly (see Table 3), but only *reflecting on practice* was a significant predictor of *learning success* in the practical term. In the final model, the social support variables were integrated, and a significant increase in the explained variance emerged ($F(8,136) = 6.481$, $p < .001$). While *reflecting on practice* turned out to be a significant predictor of *learning success*, the newly added variable *social support from mentors* also proved to be predictive of *learning success* in the practical term, whereas *peer support* had no influence. In addition, *teaching* turned out to be predictive of *learning success*, and a trend was depicted for the *use of digital tools* in remote teaching in school.

Table 3*Regression analysis*

	M ₁		M ₃		M ₄	
	<i>B</i>	β	<i>B</i>	β	<i>B</i>	β
Gender ¹	.101	.067	.118	.079	.126	.085
School type ²	.059	.046	.015	.012	-.108	-.084
Teaching			-.012	-.005	.025	.010
Linking theories to situations			.480	.139	.616	.178*
Reflecting on practice			.682	.228*	.518	.174*
Use of digital tools in school			.095	.116	.107	.131+
Social support from mentors					.338	.398***
Social support from peers					-.028	-.038
Adjusted <i>R</i> ²		-.007		.086		.233
Difference in <i>F</i>		.506		4.618**		14.250***

References: dependent variable = learning success; ¹Coding: 0 = male, 1 = female; ²Coding: 0 = secondary school, 1 = primary school; +*p*<.10, **p*<.05, ***p*<.01, ****p*<.001; *n* = 145; Durbin-Watson: 2.020.

DISCUSSION

This paper presents the results of a cross-sectional survey study conducted with pre-service teachers who completed their practical term during the COVID-19 pandemic in the academic year 2020/21. Despite changes introduced at schools as a result of the pandemic, our findings show that the long-term internship is associated with high learning effects for pre-service teachers. This is true especially in terms of teaching-related activities during the school-based part of the internship. The extent of the perceived effectiveness of the school-based part of the practical term during COVID-19 is comparable to the findings of studies prior to the pandemic (Bach, 2015; Mertens et al., 2018).

Regarding different learning activities in terms of *teaching*, *linking theories to situations*, and *reflecting on practice*, the present sample shows frequencies comparable to the results of previous surveys on learning activities during the practical term conducted prior to COVID-19 (Doll et al., 2020; König et al., 2018). In particular, respondents reported quite extensive teaching activities during their practical term, which was expected given the structure of the long-term internship during which our study took place. Although the practical term occurred during a partial school closure due to the lockdown in the fall of 2020, learning success regarding the role as a teacher and learning success regarding the preparation and implementation of face-to-face instruction were rated as high by the surveyed pre-service teachers, while learning success regarding the preparation and implementation of remote teaching scenarios was perceived lower. Our study did not find evidence in support of the assumption that opportunities to learn from experienced teachers were as limited as the contact with peers due to pandemic-induced changes in schools. On the contrary, our

findings illustrate a high level of perceived social support during the practical term; especially the support provided by mentors was experienced as intense and highly relevant.

Pre-service teachers' learning activities during the practical term in times of COVID-19 might differ from those occurring in regular conditions, for example because lessons are less frequently conducted in face-to-face settings and instead more frequently designed for digitally supported formats (Caruso & Bruns, 2021; Flores & Gago, 2020). This assumption could be confirmed only to a limited extent and exclusively with regard to learning experiences relating to remote teaching. It was expected that pre-service teachers would be confronted with novel situations such as the preparation and implementation of remote teaching formats, which could be used as learning opportunities for rethinking traditional instructional practices (Darling-Hammond & Hyler, 2020; Eickelmann & Gerick, 2020). Pre-service teachers completing the practical term of their teacher training program during the pandemic would have witnessed this redesign of instruction and therefore might have had opportunities to acquire knowledge about digitally supported instructional practices (Flores & Gago, 2020; Hase & Kuhl, 2021). Our findings illustrate that pre-service teachers provided ambivalent assessments regarding their experience of distance learning and remote teaching. Although the majority of pre-service teachers who conducted remote teaching in schools rated the experience as positive and encouraging, remote teaching was also described as a complex experience which required effort beyond what was expected. This is in line with results from a qualitative study of novice teachers conducted during the first pandemic-related school lockdown in the spring of 2020, in which distance teaching was associated with both benefits and disadvantages. In terms of disadvantages, the workload as well as the lack of control over who used the learning material (e.g., used by parents and not by the student) were criticized in particular (Caruso & Bruns, 2021). In our data, the missing values of the corresponding questionnaire items further signal divergent experiences of remote teaching; obviously not all pre-service teachers had the opportunity to conduct distance learning during their practical terms. Overall, the learning success associated with remote teaching was perceived lower than the learning success regarding face-to-face instruction.

Regarding reasons for not using digital tools for delivering their own lessons, pre-service teachers reported that digital tools were not used at the respective school or that they did not feel sufficiently supported by school staff in planning remote teaching scenarios. The rare or non-use of digital tools in these schools is surprising given the fact that schools had been in the process of adapting to the circumstances of the pandemic for months and had already had to switch to alternative and/or digitally supported learning models during the school closures of the spring of 2020. However, this finding is in line with previous studies on digitalization in German schools which showed that the use of digital tools was comparatively rare prior to COVID-19 (Eickelmann et al., 2019; Drossel et al., 2019) and varied widely across schools at the beginning of the pandemic (Eickelmann & Drossel, 2020; Huber et al., 2020). In Hase and Kuhl's (2021) study focusing on pre-service teachers'

experiences during their internship during the first pandemic-related school closure, respondents also perceived the acquisition of and access to digital media in schools as a challenge. However, the availability of digital resources is essential for maintaining communication with students and successfully delivering online lessons (König et al., 2020b). As attitudes, knowledge, and competencies are also necessary for the actual use of digital media (e.g., Teo, 2009) and empirical evidence showed disadvantages in these areas especially for pre-service teachers (Senkbeil et al., 2020), an expansion of the technological infrastructure in German schools as well as the provision of support structures for developing positive attitudes and digital competencies is required. In the long term, an increased use of digital tools by experienced teachers may also enable these teachers to pass on their knowledge about digital media to prospective teachers during internships.

The findings of the regression analysis confirm the relevance of specific characteristics of utilization (in terms of the learning activities *reflecting on practice, teaching*) and of the offer structure (in terms of *social support*) of the practical term for perceived learning success during this phase of teacher education (König & Rothland, 2018; Kunter et al., 2013; Tabachnick & Zeichner, 1987). Reflection is not only assumed theoretically (e.g., Schön, 1983), but has also been empirically shown in previous studies to be relevant for professional development (König et al., 2020a; König & Rothland, 2018). Furthermore, own teaching experiences were found to be of high importance for pre-service teachers' professional development in previous studies (e.g., Bach, 2015; Mertens et al., 2020). However, in the sample of this present study, the strongest predictor for learning success was *social support from mentors*, which is also in line with previous research (e.g., Clarke et al., 2014; Festner et al., 2018; Hobson et al., 2009; Lawson et al., 2015). Overall, the results from the present regression analysis clearly support and confirm the previous state of research on practical phases in teacher education. Although the pandemic-related situation in schools and the switch to digital learning scenarios represented a new learning environment for pre-service teachers, these new circumstances did not affect the relevance of their own teaching experiences in face-to-face settings or perceived social support as predictive variables for learning success during the internship.

LIMITATIONS AND RECOMONDATIONS

The present study entails some methodological limitations. One important aspect is its explorative nature and cross-sectional design. In order to make reliable statements about predictive variables and conditions for pre-service teachers' professional development during the practical term, longitudinal studies would be required, and even these would not be able to express causality accurately. Furthermore, no measures of (self-assessed) professional competencies such as pedagogical knowledge or self-efficacy were used. Instead, our study is based on a broad definition of learning, and we operationalized only learning success as the perceived development of knowledge and skills in different areas of teaching. Learning activities and development in non-teaching areas of the profession, such as cooperating with other colleagues, were not part of our questionnaire. As self-assessment

scales were implemented, little is known about pre-service teachers' actual behavior. Although our sample consists of pre-service teachers from different universities in North Rhine-Westphalia, the given sample might not be representative and response bias effects are possible due to the voluntary nature of participation in the online survey.

CONCLUSION

Overall, the present study offers insights into the learning experiences of pre-service teachers during their practical term in times of COVID-19. Our explorative findings reveal that the changed circumstances at universities and schools due to COVID-19 did not substantially affect pre-service teachers' learning experiences, perceived social support, or the perceived learning success and effectiveness of the practical term. However, our cross-sectional study is limited to pre-service teachers' learning experiences in different areas of teaching; learning activities in non-teaching areas of the profession should be considered in further studies. For example, learning experiences could be examined in more depth through qualitative studies. Because in our sample the lowest learning success was perceived in regard to distance teaching, the preparation and implementation of distance learning and teaching scenarios during the practical phases of teacher education could be given more attention in the future. Further research is needed to obtain additional insights into the professional development of pre-service teachers during COVID-19, including a more comprehensive consideration of the different aspects of professional competencies such as affective-motivational and cognitive dimensions. Furthermore, the question of the effects of the COVID-19 pandemic on the well-being of pre-service teachers should be considered in further studies. Occupational well-being certainly appears to be of importance to the professional competence of teachers and the learning outcomes of students (Klusmann et al., 2016), and increased stress can certainly be expected given findings of other research on studying during the pandemic (e.g., Elmer et al., 2020; Odriozola-González et al., 2020).

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