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**To cite this article:** Lucas M. Jenö, Dag Roness, Liv Eide, Øyvind Wiik Halvorsen, Edel Karin Kvam, Zeljana Pavlovic, Martin Sjøen & Marit Ulvik (22 Apr 2026): The impact of practicum on motivation among student teachers: a semester-long study based on self-determination theory, *Scandinavian Journal of Educational Research*, DOI: [10.1080/00313831.2026.2662234](https://doi.org/10.1080/00313831.2026.2662234)

**To link to this article:** <https://doi.org/10.1080/00313831.2026.2662234>



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Published online: 22 Apr 2026.



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# The impact of practicum on motivation among student teachers: a semester-long study based on self-determination theory

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## ABSTRACT

The aim of this short-term longitudinal study was to identify salient factors within practicum and develop a questionnaire to measure practicum experiences, and explore how practicum periods affect changes in student teachers' motivation to continue initial teacher education within a semester. We measured student teachers' relative self-determined motivation for continuing initial teacher education at the beginning and the end of the semester. Students' practicum experiences were measured following a mandatory practicum period midway through their semester. We found that longer practicum periods were superior for some practicum experiences compared to shorter periods. We also found that the experience of basic need satisfaction in practicum and integration of theory and practicum during practicum had a positive effect on intrinsic and autonomous motivation, respectively. Our study has been a first step towards understanding how practicum experiences during both short- and long-term periods impact students' motivation, an area previously understudied.

## ARTICLE HISTORY

Received 25 April 2025  
Accepted 13 April 2026



## KEYWORDS

Teacher education; school practicum; self-determination theory; longitudinal study; higher education

## Introduction

School practicum is a significant aspect of student teachers' professional development in teacher education (Darling Hammond, 2014; Hart, 2020) because it offers students an opportunity to experience the teaching role (Fuentes-Abeledo et al., 2020). When student teachers are asked what is most beneficial about teacher education, they highlight practicum in school (Hart, 2020; Roness, 2011). Student teachers report being more prepared for teaching and becoming more motivated to teach and having high learning outcomes following a practicum period (Flaget, 2021; Rondfeldt, 2021; Sørensen & Bjørndal, 2021; Wiggen et al., 2022). Student teachers are generally satisfied with this part of their education.

Nevertheless, although practicum is the most valued part of teacher education, it is also criticized. Practicum is described as a "lottery" (Hegerstrøm, 2018), suggesting that what the students encounter in practicum is often random and of varying quality (Vanassche, 2023). Research also indicates that experience gained in practicum might affect dropout intention (Pfitzner-Eden, 2016). There is a paucity of research on what and how student teachers learn during practicum

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(Munthe et al., 2020). Furthermore, practicum is described as a “black box”, suggesting that practicum needs further scrutiny (Sørensen, 2019).

Reviews of the literature regarding practicum (Lawson et al., 2015), quality in practicum (Munthe et al., 2020), and how teacher education institutions ensure quality in practicum (Wiese et al., 2024) have been conducted. However, these reviews highlight that research on practicum consists of relatively small-scale studies, with limited focus on how student teachers themselves perceive their development during practicum (Allen & Wright, 2014). This suggests that more large-scale studies are needed to better understand how student teachers experience the practicum. Furthermore, there are insufficient insights into the motivational processes in the practicum experience (Dreer, 2020), and how factors within the practicum impact motivation. This is particularly important, given that research suggests that experiences during teacher education influence student teachers’ future job motivation (Rots et al., 2012). This is a concern that warrants further investigation, especially given recent claims about the scarcity of teachers in Europe (Bakken, 2022; EU, 2023; Statistics Norway, 2024).

To help fill the gap in the literature, the aim of this exploratory short-term longitudinal study is twofold. First, to identify salient factors within practicum and develop a questionnaire to measure practicum experiences. Second, to explore how practicum periods affect changes in student teachers’ motivation to continue initial teacher education.

We investigate students’ motivation across a semester in which students participate in either short-term or long-term practicum periods. Furthermore, to fulfill our aim, we have developed and tested a novel questionnaire containing a multidimensional scale to measure practicum experience in teacher education. We employ Self-Determination Theory (SDT) in our study as a theoretical framework to understand the motivational processes of practicum. SDT is a comprehensive theory of motivation that has been applied to student teachers and teacher education (e.g., Haukås et al., 2023; Perlman, 2013). However, studies are lacking concerning the longitudinal effect of practicum on students’ motivation. Thus, our contribution is also to apply SDT to investigate how practicum experience impacts student teachers’ motivation throughout a semester. In our current study, SDT will be used to measure the nature of student teachers’ motivation for continuing initial teacher education to better understand the mechanisms by which practicum experiences influence motivational processes.

### ***Self-determination theory and the classes of motivation***

SDT differentiates between higher-order motivation classes, which vary in relative self-determination (Ryan & Deci, 2017): amotivation, controlled motivation, autonomous motivation, and intrinsic motivation, respectively. Amotivation is characterized by a non-self-determined form of motivation, and is when a student does a behavior without intention or value. Controlled motivation is characterized by some self-determination, and is when students are regulated by either external (e.g., receive a reward or avoid punishment) or internal (e.g., avoid guilt or attain pride) pressures. Further along the continuum is autonomous motivation, which is characterized by performing an activity out of personal value and importance (identified regulation) or through full congruence and synthesis between personal values and overall goals (integrated regulation). Finally, the most self-determined class of motivation is intrinsic motivation. Intrinsic motivation is characterized by activities done with a full sense of volition and endorsement, interest, and enjoyment.

Numerous studies have found that autonomous classes of motivation are more beneficial for learning, persistence, and wellness, compared to amotivation and controlled motivation (see review, Howard et al., 2021). However, for students to experience autonomous forms of motivation, the social context needs to support students’ basic psychological need for autonomy (feeling agency and volition), competence (feeling effective and mastery), and relatedness (feeling cared for and valued). According to SDT, allowing students to experience a sense of value, choice and freedom during decision-making processes (autonomy), providing dense feedback and optimal challenges

(competence), and showing empathy and care (relatedness) are necessary conditions for experiencing basic psychological need satisfaction (Slemp et al., 2024).

### ***Practicum experiences***

Throughout teacher education, student teachers are expected to develop teacher professionalism, enabling them to meet the demands of the profession (Askling et al., 2016). During this process, school practicum is a core element. During practicum, student teachers are provided with an authentic, hands-on opportunity to develop skills and reflect on experiences that are often more difficult to acquire on campus alone. Teaching students in authentic situations requires student teachers to integrate their subject knowledge and didactics in the classroom. Still, bridging the gap between theory and practicum has been stressed in multiple studies and teacher education has been criticized for a lack of coherence.

In Norway, practicum contains many components and is considered an integral aspect of teacher education (UHR, 2017a, 2017b). Yet it is unclear which specific factors within practicum are central to the perception of a positive practicum experience, as, to our knowledge, no questionnaire exists to measure practicum experiences.

In our review of the literature, we find several factors that are suggested as important for practicum. First, we find that a central factor is the integration of theory and practicum (Canrinus et al., 2017; Korthagen, 2010). In general, teacher education has been criticized for the gap between what is taught on campus and what happens in practicum (Allen & Wright, 2014; Raaen & Thorsen, 2020). Teaching on campus and practicum experiences are described as two “different worlds” (Helleve & Ulvik, 2019). The coursework on campus is academically oriented and may not have direct relevance to practicum (Gjems & Vinje, 2015). The school-based mentors are practically oriented, and student teachers are occupied with learning the practical aspects of teaching (Lipponen & Kumpulainen, 2011; Ulvik et al., 2018). To conduct meaningful teacher education, the theoretical perspectives must be appropriate to practicum. Therefore, building a cohesive understanding between theory and practicum has been viewed as a crucial element in teacher education (Grossman et al., 2009; Klette & Hammerness, 2016).

A second important factor for successful practicum experience is the school-based mentors’ support (Sørensen & Bjørndal, 2021) and the mentor-student relationship (Hagenauer et al., 2023). The mentor must be a constructive role model who provides the student teachers space and freedom to explore their own capacity (Yangın Eksi et al., 2019). The mentor must also create friction and encourage the student teachers to analyze the rationale for their actions (Kvam, 2019). Building on this, how student teachers are met and included by both the mentor and the practicum school is an important factor for the student teachers’ development (Caires et al., 2012; Warner & Hallman, 2017). Being included as a member of staff will give the student teacher a sense of inclusion, and not of being a mere visitor. This relates to both professional relations and to building a community of practicum.

Third, the practical organization of practicum is also important (Fuentes-Abeledo et al., 2020; Munthe et al., 2020). Organizational issues contain aspects about how practicum is structured and organized. Students complain about practical issues such as long commutes to practicum schools, and multiple assignments at the same time, and there are reports of out-of-field teaching (Hobbs & Porsh, 2021). Wiese et al. (2024) suggest that clear requirements and expectations from teacher education institutions will make the practicum period more predictable for student teachers, mentors, and practicum schools.

Fourth, the relevance of teacher education has been a subject of ongoing debate for many years (Sandvik et al., 2020). Relevance in teacher education is connected to the student teachers’ activities during practicum. Finding a one-fits-all solution is impossible, and contextual factors are important (Darling Hammond, 2021). Yet the perspective of relevance revolves around teacher students experiencing that what they do in practicum is relevant for their future work as teachers.

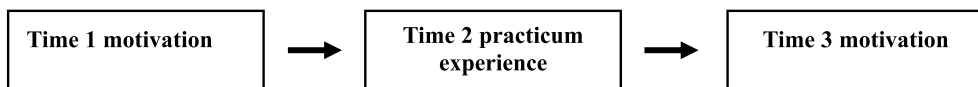
Finally, another line of research has investigated how basic psychological needs are satisfied during practicum. For instance, Liu and Siteo (2020) found among student teachers during practicum that basic need satisfaction was related to increased lesson preparation, enjoyment, perceived value, effort, and less pressure. Furthermore, Guo and Xu (2024) argue that the need for autonomy and competence satisfaction nurtures student teachers' intrinsic motivation to teach. They found that relatedness has less influence on intrinsic motivation, but is still important regarding enjoyment of teaching. In a longitudinal study, Evelein et al. (2008) found that students experience considerable need-thwarting during their first teaching experience, which was related to negative experiences. In an adjacent study, Korthagen and Evelein (2016) found that basic need satisfaction predicted beneficial teaching behaviors among student teachers. Similar results were found in a qualitative study (Karaarslan et al., 2013). In a recent study, Pan et al. (2025) found among Australian student teachers that need support and relatedness with colleagues during practicum periods were positively related to intending to continue in their current practicum school. This suggests that basic psychological need satisfaction is also an integral part of student teachers' practicum experience.

### **Current study**

In this explorative short-term longitudinal study, we investigate how practicum affects student teachers' motivation to continue initial teacher education and explore how practicum impacts motivation over time. We investigate practicum experience among Norwegian student teachers attending a teacher education program for upper secondary school (level 8th to 13th). Our hypothesized model is presented in Figure 1. We hypothesize that student teachers' changes in motivation from time 1 to time 3 will be affected by practicum experiences in time 2.

Based on our review, we have developed factors aiming to measure different aspects of practicum. Thus, we will test the impact of these practicum factors on motivation, to capture how they predict motivation. In addition to the five above-mentioned factors (i.e., integration of theory and practicum, relationship with mentors, accepted in practicum, organization of practicum, relevance in practicum, and basic psychological need satisfaction in practicum), we included two additional factors to account for practicum experience. Specifically, the national curriculum for teacher education in Norway stipulates that practicum should exhibit both progression and variation, corresponding to the tasks in their practicum experience (Ministry of Education, 2016a, 2016b). According to Munthe et al. (2020), progress in practicum can be interpreted as either an increase in the level of difficulty or as a process in which new experiences build upon previously acquired knowledge. Furthermore, variation in practicum entails that student teachers should have the opportunity to engage in various tasks and experience the diversity inherent in the teaching profession. Thus, although not found in our literature review, these two factors (i.e., progress in practicum and variation in practicum) will also be included in our study because they may impact student teachers' motivation and are a central aspect of practicum in Norwegian teacher education.

Finally, we also investigate differences between short-term (1–2 weeks) and long-term practicum (seven weeks) periods and how these forms of practicum affect practicum experience. Although the implementation of practicum in schools varies across countries in terms of aims and philosophy, location, and assessment methods (Flores, 2017), understanding the duration of practicum has not been thoroughly examined, thus making our contribution valuable.



**Figure 1.** Hypothesized model. Note: The figure depicts the hypothesized relations between practicum experiences and changes in motivation across time.

## Methods

### *Participants and procedure*

Participants comprised 281 student teachers from two teacher education programs (five-year master teacher education program and a one-year post graduate teacher education program) at a large university in Norway. The mean age of the participants was 22.6 years ( $SD = 4.36$ ), and the gender distribution was as follows: males = 89, females = 188, and others/prefer not to disclose = 4. Most of the student teachers had no teaching experience ( $n = 153$ ) or some teaching experience ( $n = 112$ ), whereas only a few had much teaching experience ( $n = 16$ ). The students had varying degrees of previous education (no higher education = 178, one-year unit = 55, Bachelor of Science = 23, Master of Science = 23, and PhD = 1). Most students had teacher education as their primary election for education ( $n = 258$ ), as opposed to non-primary election ( $n = 23$ ). The students in our sample either had a short-term practicum period ( $n = 219$ ) or a long-term practicum period ( $n = 62$ ). The five-year teacher education program is an integrated program structured in such a way that the student teachers undertake short-term practicum in the first, third, and fifth semesters. The short-term practicum is mainly an observational practicum integrated into the program preparing the students for the teaching role. The student teachers observe a mentor teaching and engaging in other professional activities. It also includes minor teaching assignments for the student teachers. Long-term practicum is conducted during the seventh and eighth semesters when the student teachers are more competent in their chosen subjects. In the one-year program, the student teachers have long-term practicum in both semesters. These students have already earned a master's degree, are competent in their subjects, and are given independent responsibility for teaching during their first practicum period. In the long-term practicum in both programs, the student teachers take over the teaching after a brief observation period, either individually or in pairs with a fellow student, under the supervision of school-based mentors.

Data was collected at three time-points in August, September/October, and November of 2023. Time 1 was during the students' first week of formal teaching on campus. The student teachers were asked to respond to a questionnaire that consisted of background questions and motivation for continuing initial teacher education. Time 2 was midway through the semester; immediately after the practicum period in school was completed, the students responded to a new questionnaire designed to measure their experience of being in practicum. Finally, time 3 was during the student teachers' final week of formal teaching on campus for that semester. The students were again asked about their motivation for continuing teacher education.

We collected the data through Survey Xact. Participation was voluntary and no compensation was given. Students could withdraw from participating in the study at any time, and the study was registered under the institutional ethical review board (System for Risk and Compliance), in line with local guidelines.

### *Development of the questionnaire*

We developed a novel questionnaire to measure different aspects of practicum experience. Our approach to creating this new scale was a four-step process. We followed guidelines from DeVellis (2017).

First, we reviewed the literature and identified different recurring constructs and factors of practicum experience. We then operationalized the constructs as being related to teacher education. Second, we generated a large pool of items related to each of the constructs and factors. Additionally, we added existing scales if they existed in the pool of items. Only one such scale was added, namely the basic psychological need satisfaction scale (BNSFS) (Chen et al., 2015). We retained three items from the BNSF scale following guidelines from (Martela & Ryan, 2021). Third, two experts in teacher education were asked to review the sample of items and delete, revise, and

propose new items related to each construct and factor. The two experts have published substantially within the field of teacher education, teacher professionalism, and student teachers' practicum. Furthermore, we asked a small group of student teachers to evaluate each item and provide us with in-depth feedback. Finally, we conducted factor analyses and reliability tests to test the factor structure for each construct and factor.

In total, we developed 72 items to measure integration of theory and practicum, relationship with mentors, being accepted in practicum, organization of practicum, experience of relevance in practicum, variation in practicum, progress in practicum, and basic need satisfaction in practicum. After the expert round, we removed 22 items due to redundancy, overlap, or inconsistency. The final number of items for the practicum experience scale was 50.

## **Measures**

### ***Motivation***

To measure students' motivation at times 1 and 3, we used an adapted version of the Self-Determination Index (SDI) (Levesque-Bristol, 2021). The SDI consists of 18 items measuring the different regulations as conceptualized within SDT (i.e., amotivation, external regulation, introjected regulation, identified regulation, integrated regulation, and intrinsic motivation). The scale can also be employed to create classes of motivation to measure amotivation, controlled motivation, autonomous motivation, and intrinsic motivation. We created composite variables for each motivational class. The participants were asked for reasons why they continue in teacher education. An item example for each motivational class is "because it is interesting" (intrinsic motivation), "because the teacher profession seems meaningful to me" (autonomous motivation), "because it's expected that I'm going to become a teacher" (controlled motivation), and "I don't know, I feel like I'm wasting my time in teacher education" (amotivation). Participants responded on a Likert scale ranging from 1 (completely disagree) to 7 (completely agree).

### ***Practicum Experience in Teacher Education Scale (PETES)***

Participants responded to the newly developed scale to measure practicum experience in teacher education. The 50-item PETE scale contains eight subscales: Integration of theory and practicum (5 items), Relationship with mentor (7 items), Accepted in practicum (3 items), Organization of practicum (12 items), Relevance in practicum (6 items), Varied practicum (3 items), Progress in practicum (4 items), and Basic need satisfaction in practicum (9 items). See the Appendix for item wording in English and Norwegian. Participants responded on a Likert scale ranging from 1 (completely disagree) to 7 (completely agree).

## **Data analytical procedures**

Preliminary and primary analyses were performed using the open-source statistical software R version 4.3.2 (R Core Team, 2018). We employed a t-test to test for mean differences between the length of practicum and practicum experience.

For our factor analyses (PAF: Principal Axis Factoring), we used the "psych" (Revelle, 2018) package. PAF was chosen due to the exploratory nature of our scale development (e.g., Belhekar, 2016). We used oblique rotation which allows for factors to correlate. Prior to the PAF, we used parallel analysis with 100 iterations to determine the optimal number of factors in our scale. To inspect the factor structure, we used the following criteria: Kaiser-Meyer-Olkin (KMO) with values above 0.60 and eigenvalues above 1 (Belhekar, 2016), and factor loadings above 0.40 (Tabachnick & Fidell, 2007). Additionally, we used Cattel's scree plots for visualization to support the statistical output and ease of interpretation. Finally, we used CFA (Confirmatory Factor Analyses) for all practicum experience subscales simultaneously to supplement the PAF results using the "lavaan" package (Rosseel, 2012).

We employed “lavaan” (Rosseel, 2012) to perform the longitudinal analysis of the effects of practicum on motivation through path analysis. For both the CFA and path analysis, we followed conventional model fit criteria to evaluate model fit (Hu & Bentler, 1999). Specifically, a non-significant chi-square test (Schermelel-Engel et al., 2003), values above .90 for the comparative fit index (CFI), Tucker-Lewis Index (TLI), and incremental index of fit (IFI), and values below .09 for the root mean square error of approximation (RMSEA) and standardized root mean square residual (SRMR) are recommended. Missing data were handled through the FIML (Full information maximum likelihood) approach, which is the least biased approach for handling missing data with path analysis (Byrne, 2016).

## Results

### Factor analysis and reliability of the PETE scale

We conducted an initial parallel analysis of the original PETE scale to determine the number of factors. The parallel analysis suggested 9 factors with eigenvalues above 1, with 7 as the optimal number of factors. We then proceeded with 7 factors. Results from the PAF reduced the original number of items for each subscale of the PETE scale. We removed items that cross-loaded on other factors or that loaded on other factors than the intended factor. The factors “Varied practicum” and “Progress in practicum” were removed entirely due to low factor loading and cross-loadings. We re-ran the parallel analyses, which suggested 6 factors as the optimal structure. After specifying a 6-factor solution, we ran a new PAF analysis, which showed a clear 6-factor structure. Across all 6 factors, the factor solutions were acceptable, with eigenvalues > 1, KMO > 0.60, factor loadings > 0.40, and a significant Bartlett’s test of Sphericity,  $\chi^2(15) = 80.42, p < .001$ . Two factors, “Accepted in practicum” and two relatedness items from the “Basic need satisfaction in practicum” with similar wording loaded on the same factor, which might suggest a higher-order factor for these factors. All items in this factor were related to being included, integrated, or acknowledged by the practicum school. The presence of a potential higher-order factor was tested using CFA.

We then conducted a CFAs and reliability tests to confirm the factor structure found in the PAF analysis. Results from the CFA showed acceptable model fit indices, CFI = 0.90, TLI = 0.89, IFI = 0.90, RMSEA = 0.76 (0.068, 0.085), SRMR = 0.076, with factor loadings  $\geq 0.50$ . Internal consistency (Cronbach’s alpha and McDonald’s omega) of each of the final PETE subscales was acceptable (see Table 1). See Appendix 2 for the results of the CFA.

**Table 1.** Descriptive statistics.

Variables	<i>n</i>	Mean	SD	$\alpha$	$\omega$	Skew.	Kurt.
<i>Time 1 motivation variables</i>							
Intrinsic motivation	276	5.60	0.93	0.82	0.82	−0.92	1.36
Autonomous motivation	276	5.52	0.98	0.88	0.94	−1.03	1.59
Controlled motivation	276	2.31	1.04	0.83	0.89	0.64	−0.36
Amotivation	276	2.15	1.27	0.81	0.82	1.09	0.53
<i>Time 2 Practicum Variables</i>							
Organization	187	5.17	1.43	0.82	0.84	−0.75	−0.26
Relationship with mentor	185	5.77	1.18	0.91	0.93	−1.27	1.51
Relevance in practicum	181	5.50	1.40	0.90	0.92	−1.11	0.52
Integrate theory and practicum	180	4.24	1.33	0.88	0.91	−0.53	−0.22
Basic need satisfaction in practicum	179	5.34	1.15	0.82	0.85	−0.85	0.49
Inclusion in practicum	179	5.12	1.30	0.87	0.91	−0.63	0.01
<i>Time 3 motivation variables</i>							
Intrinsic motivation	147	5.21	1.20	0.89	0.89	−0.89	0.380
Autonomous motivation	147	5.23	1.06	0.88	0.95	−0.64	0.34
Controlled motivation	147	2.13	1.14	0.85	0.92	1.15	0.89
Amotivation	147	2.35	1.39	0.85	0.85	0.98	0.34

Note: The table includes all study variables.

### Descriptive statistics

The final results of the reliability statistics for the PETE subscales are presented in Table 1. All subscales showed acceptable reliability values (Cronbach's alpha and McDonald's omega). Descriptive statistics are presented in Table 1 for the motivational variables at Time 1 and Time 3. All motivational variables showed acceptable signs of normality and reliability indices.

Results of the correlation between the subscales within the PETE scale are presented in Table 2. The correlation matrix shows that all correlations are positive and significant. Our results show that the correlation between the subscale integrate theory and practicum with the rest of the subscales is small to medium, while for the rest, the correlations are medium to large.

### Mean differences

We conducted several t-tests to investigate the mean difference between the length of practicum for the various subscales within PETE. The results are presented in Table 3, while the mean differences are visualized in Figure 2. The Levene's test for all factors was  $p > 0.05$  except for Basic need satisfaction in practicum, which was non-homogeneous. Thus, we conducted a Mann-Whitney U Test for Basic need satisfaction in practicum. The mean difference was significant ( $W = 1831.5, p = .005$ ), suggesting that students in long-term practicum experienced more Basic need satisfaction. Results from the t-tests showed that for the other factors, all were non-significant except for relevance in practicum, which suggested that long-term practicum had higher scores of relevance relative to short-term practicum. Mean differences between short-term and long-term practicum for all factors were small to medium in magnitude ( $d < 0.2-0.5$ ).

### Path-analytical modeling

Bivariate correlations between the motivational variables at time 3 and the practicum factors (measured at time 2) are presented in Table 4. The results showed a positive correlation between intrinsic motivation and integrated theory and practicum, between autonomous motivation and relationship with mentor, basic need satisfaction in practicum, and inclusion. In contrast, amotivation showed a negative correlation with organization, relationship with mentor, relevance in practicum, basic need satisfaction in practicum, and inclusion. The rest of the correlations between the motivational classes and practicum subscales were all non-significant.

To analyze how practicum affects teacher students' motivation for continuing teacher education, we conducted a path-analytical model. Initially, we had planned to conduct a difference score model. However, given the small differences in means between the time 1 and time 3 scores of the motivational variables, the reliability of the difference scores became low and unreliable. We

**Table 2.** Correlates of the practicum subscales.

Variable	1	2	3	4	5
1. Organization					
2. Relationship with mentor	.61** [.51, .69]				
3. Relevance in practicum	.63** [.54, .71]	.64** [.54, .72]			
4. Integrate theory and practicum	.31** [.17, .43]	.31** [.17, .44]	.34** [.20, .46]		
5. Basic need satisfaction in practicum	.40** [.26, .51]	.50** [.38, .60]	.51** [.40, .61]	.26** [.12, .39]	
6. Included	.44** [.31, .55]	.58** [.47, .67]	.53** [.41, .63]	.28** [.13, .41]	.47** [.34, .57]

Note. \* indicates  $p < .05$ . \*\* indicates  $p < .01$ .

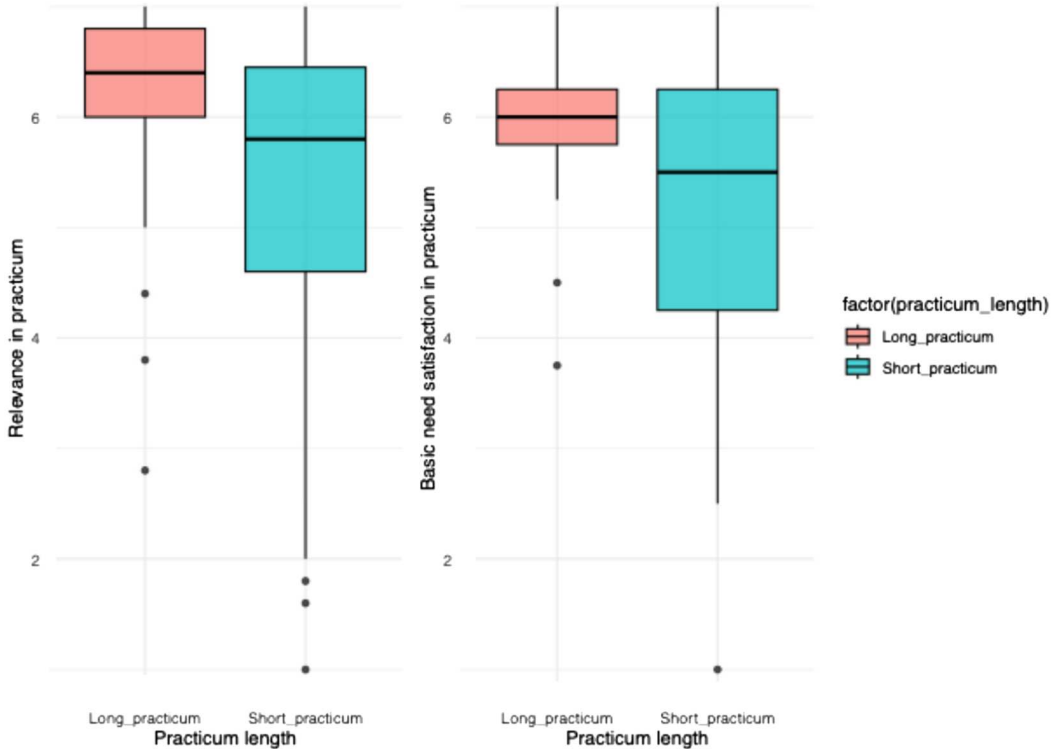
**Table 3.** Mean differences in experiences between students having practicums of different lengths.

Measures	Long practicum	Short practicum	Difference (CI 95%)	<i>t</i>	<i>d</i> (CI 95%)
	Mean	Mean			
Organization	5.14	5.07	.07 (-.47, .60)	0.26	.05(-.33, .43)
Relationship with mentor	5.70	5.77	-.06 (-.73, .60)	-.20	-.05 (-.51, .42)
Relevance in practicum	6.08	5.34	.74 (.24, 1.25)	2.96**	.59 (.18, .99)
Integrate theory and practicum	4.08	4.45	-.37 (-.90, .16)	-1.42	-.31 (-.73, .12)
Basic need satisfaction in practicum	5.93	5.20	.50 (.44, 1.24)	1831.5**	.24
Included	5.46	5.00	.46 (-.25, 1.17)	1.33	.31 (-.16, .77)

Note: \* $p < .05$ , \*\* $p < .01$ , † $p < .10$ . Mean values, effect size (Cohen's *d*) for mean difference, and CI = Confidence interval for difference between means, are shown for long practicum ( $n = 26$ ) and for short practicum ( $n = 104$ ).

found the following reliability scores for the difference scores for intrinsic motivation ( $\alpha = .69$ ), autonomous motivation ( $\alpha = .58$ ), controlled motivation ( $\alpha = .54$ ), and amotivation ( $\alpha = .43$ ). We thus created a path-analytical model in which time 1 motivational variables predicted practicum factors at time 2, which in turn, predicted time 3 motivational variables. We added a correlation between each motivational variable at time 1 and its respective variable at time 3, to test for construct stability. Furthermore, we added correlations between all the practicum factors at time 2 given the positive correlations between the practicum factors.

Given some high mean scores and non-normal data (indicative of somewhat high skewness and kurtosis levels), we employed Maximum Likelihood with Robust standard error (MLR). MLR estimates robust standard error, which accounts for non-normal data and missing data (Lai, 2018). The results for our model had a good model fit, CFI = .98, TLI = .92,  $\chi^2(df) = 22,83 (12)$ ,  $p = .029$ , RMSEA = .05 (95% CI: .01, .08), SRMR = .03. Results from the path analysis (Figure 3) show that



**Figure 2.** Box plot showing differences in perceived relevance and basic need satisfaction in practicums of different lengths. Note: Central tendencies are represented with median values.

**Table 4.** Correlates of time 3 motivational variables and practicum subscales.

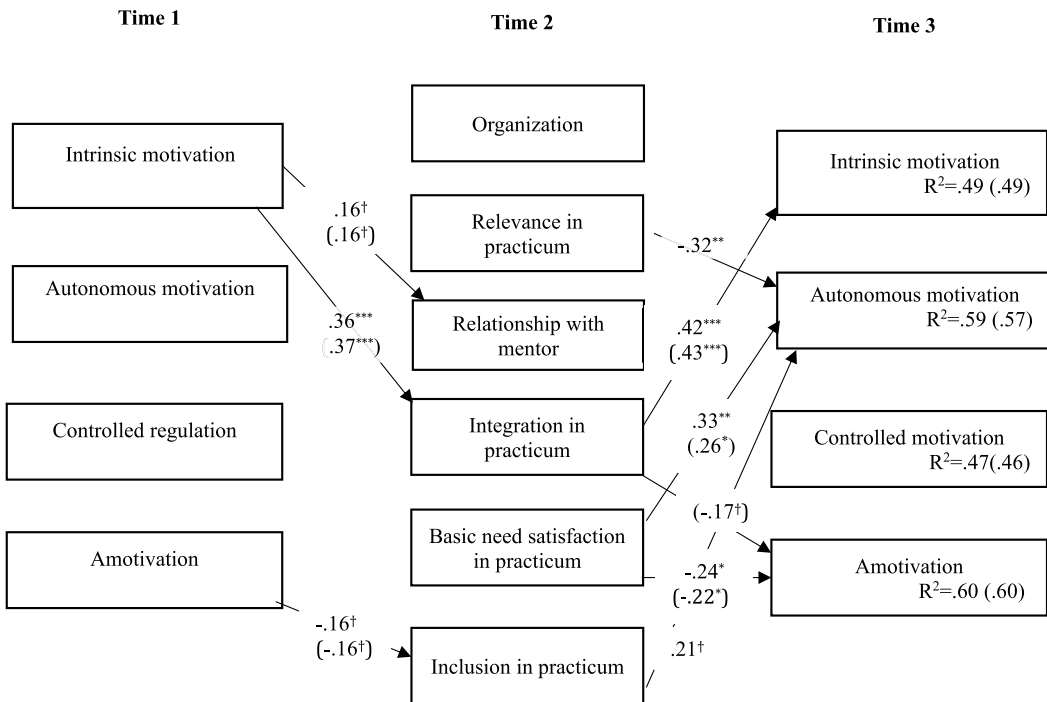
Variable	1	2	3	4	5	6	7	8	9
1. Intrinsic motivation									
2. Autonomous motivation	.33** [.18, .47]								
3. Controlled motivation	.10 [-.07, .26]	.43** [.28, .55]							
4. Amotivation	-.46** [-.58, -.32]	-.55** [-.65, -.43]	-.02 [-.19, .14]						
5. Organization	.19 [-.03, .39]	.13 [-.09, .34]	-.12 [-.32, .10]	-.35** [-.53, -.15]					
6. Relationship with mentor	.15 [-.07, .35]	.26* [.05, .45]	-.03 [-.24, .19]	-.40** [-.57, -.20]	.61** [.51, .69]				
7. Relevance in practicum	.08 [-.14, .29]	.16 [-.06, .37]	-.04 [-.25, .18]	-.28* [-.47, -.07]	.63** [.54, .71]	.64** [.54, .72]			
8. Integrate theory and practicum	.49** [.30, .64]	.10 [-.12, .31]	-.09 [-.30, .13]	-.20 [-.40, .02]	.31** [.17, .43]	.31** [.17, .44]	.34** [.20, .46]		
9. Basic need satisfaction in practicum	.14 [-.08, .35]	.41** [.21, .58]	-.07 [-.28, .15]	-.45** [-.61, -.26]	.40** [.26, .51]	.50** [.38, .60]	.51** [.40, .61]	.26** [.12, .39]	
10. Inclusion in practicum	.07 [-.15, .28]	.37** [.17, .55]	-.01 [-.22, .21]	-.42** [-.59, -.22]	.44** [.31, .55]	.58** [.47, .67]	.53** [.41, .63]	.28** [.13, .41]	.47** [.34, .57]

Note. \* indicates  $p < .05$ . \*\* indicates  $p < .01$ .

intrinsic motivation at time 1 positively predicts integration of theory and practicum. Integration of theory and practicum positively predicts intrinsic motivation at time 3. Basic need satisfaction in practicum positively predicts autonomous motivation at time 3, and negatively predicts amotivation at time 3. We also found some trending effects. Specifically, intrinsic motivation at time 1 positively predicts relationship with mentor, whereas amotivation at time 1 negatively predicts inclusion in practicum. Further, we found that integration of theory and practicum negatively predicts amotivation at time 3, whereas inclusion in practicum positively predicts autonomous motivation at time 3. The model accounted for a substantial amount of variance in each of the motivational variables, intrinsic motivation (49%), autonomous motivation (59%), controlled motivation (47%), and amotivation (60%).

One result deserves special attention. In our initial model, we found an unexpected relationship between relevance in practicum and autonomous motivation. When inspecting the bivariate correlation matrix, we find that the correlation is positive, although not significant,  $r = .16$  [-.06, .37]. When included in the model, the standardized regression becomes significant and negative. This may indicate a negative suppressor effect (Kline, 2011). When isolating the effect of relevance in practicum on autonomous motivation with no other variables in the model, the regression is positive, whereas once we include the other practicum factors, we find a negative relation (although not significant). Thus, for transparency, we re-ran our initial model without the relevance in practicum variable and present it in parentheses in the model. The model fit indices are not significantly different in this alternative model ( $p > .05$ ). The results are almost equivalent when comparing effect by effect, except for the abovementioned negative effect of relevance in practicum on autonomous motivation at time 3.

Finally, we tested two alternative models in which we controlled for both gender and length of practicum, with and without relevance included. In both models, our final model has better model



**Figure 3.** Path analytical model of practicum on motivation. Note: Only significant paths are shown. The scores in parentheses indicate effects when relevance is not included in the model. The results show standardized regression coefficients. Not shown in the figure is the covariation between the motivational variables at time 1, and correlations between the practicum factors at time 2. \*indicates  $p < .05$ , \*\*indicates  $p < .01$ , <sup>†</sup> indicates  $p < .10$ .

fit indices, and the difference between our final model and these two alternative models was not statistically different ( $p > .05$ ).

## Discussion

The aim of this exploratory short-term longitudinal study was to identify salient factors within practicum and develop a questionnaire to measure practicum experiences, and to explore how practicum periods affect changes in student teachers' motivation to continue initial teacher education.

To accomplish this, we developed a novel scale to assess practicum experience among student teachers. In our study, we found some interesting results regarding the length of practicum and practicum factors that predicted changes in motivation, which deserve thorough discussion.

### Scale development of practicum experience

The results of our factor analyses somewhat support the factor structure for each subscale within the PETE scale. For some of our subscales (i.e., organization, relationship with mentor, relevance in practicum, and basic need satisfaction in practicum), we had to remove some items that did not load well on the overall factor. We also removed two subscales altogether (i.e., varied practicum and progress in practicum), as these factors did not perform well. Furthermore, the factor analysis suggested that the subscale accepted in school and parts of relatedness items in basic need satisfaction in practicum formed a higher-order factor. This was not expected, yet given the similarity of the items, it was not surprising. Additionally, all the subscales correlated positively and significantly with each other, as expected. Although our analyses show some encouraging preliminary results for

the development of a new practicum experience scale, further studies are needed to validate the PETE scale. Furthermore, more research is needed to show both test-retest reliability and construct validity (DeVellis, 2017). Despite these limitations, however, developing a scale to understand features of successful practicum experience has long been a gap in the literature and a necessity in the field (Flaget, 2021).

### ***Effect of practicum length on the practicum experience***

The effect of school practicum has long been debated in the field of teacher education (Caires et al., 2012; Zeichner, 2010). Some of the discussion has centered on how to strengthen the connection between campus-based activities and what takes place in schools (Helleve & Ulvik, 2019). In the Norwegian context, the length of practicum has been a focus for student teachers (Bore Kalviknes et al., 2019), suggesting that mere short-term observation may not be as beneficial as participating in actual teaching over a length of time. To develop as professional teachers, student teachers need time to act and to reflect as teachers (Ulvik et al., 2018). In short-term practicum, there is limited time for this. Our results partly support these notions. We find that for relevance in practicum and basic need satisfaction in practicum, short-term practicum is less beneficial compared to long-term practicum periods. This suggests that for these two factors, longer practicum periods seem to be superior. The mechanisms explaining these main effects could be that spending time on practicing teaching in school might be beneficial for both developing relevant teaching skills and mastering the teaching role. Furthermore, schools, school leaders, and school mentors might invest more resources in the form of time and interpersonal relations when the students are with them for longer periods. This is in line with Darling Hammond's (2020) suggestion that extended, well-supervised experiences are important to ensure quality in teacher preparation. Previous findings also indicate that student teachers want more practicum (e.g., Finne et al., 2011), and that professional understanding and teaching skills develop over time (Canrinus et al., 2017). A final interpretation of these results is that the students in the short-term practicum (1-3rd year) have progressed slightly less than those in the long-term practicum (4th year), contributing to differences in expectations and motivation. Students in the long-term practicum have stronger theoretical knowledge and have more relevant and genuine teaching experiences than students in the short-term practicum, which may underlie the present findings.

We find no mean differences between lengths of practicum for organization, relationship with mentors, integration of theory and practicum, and being included. This may imply that length of practicum does not have an impact on these factors. When considering the mentor relationship, it may be surprising that it does not have an impact on the length of practicum despite previous research indicating that the mentor's significance is substantial (e.g., Hagenauer et al., 2023; Sørensen & Bjørndal, 2021; Stanulis & Russell, 2000). More studies are needed to validate this specific finding.

### ***Predicting motivation across time***

The student teachers' intrinsic and autonomous motivation was relatively high at both measurement times, whereas controlled motivation and amotivation are relatively low at both measurement times. Yet our results seem to indicate that there is a slight change in motivation as a function of a practicum period. This means a tendency for autonomous forms of motivation (i.e., intrinsic motivation and autonomous motivation) and controlled motivation to decrease, whereas amotivation increases. This may be a concern, given the importance of practicum periods for motivation and for becoming a teacher in general (Rones, 2011; Wiggen et al., 2022). Many student teachers experience practicum in school as random, which impacts the student experience (Hegerstrøm, 2018). However, this is not necessarily supported in our study.

Our results from the path analysis show that intrinsic motivation at time 1 positively predicts integration of theory and practicum. This suggests that students with motivation that is characterized by interest and enjoyment are more able to apply theoretical concepts to practical problems. The previously described gap between theory and practicum does not seem to apply to students who are intrinsically motivated to become teachers (Allen & Wright, 2014; Raaen & Thorsen, 2020; Thornberg et al., 2023). Our findings suggest that these student teachers are able to transfer the theoretical perspectives acquired on campus into practical school settings.

Furthermore, integrating theory and practicum, and satisfying basic needs in practicum positively enhanced both intrinsic and autonomous motivation, respectively. Basic need satisfaction in practicum decreased amotivation at time 3. One compelling interpretation of these findings is that factors within the practicum period that are related to being a teacher (Fuentes-Abeledo et al., 2020), and the experiential quality during practicum have a positive effect on students' self-determined motivation. This claim is consistent with some existing literature underscoring the importance of coherence between campus and practicum (Canrinus et al., 2019). Further, basic needs satisfaction in practicum seems to have a protective effect on amotivation. This finding is in line with SDT (Ryan & Deci, 2017). When students experience structure, care, and meaningful choices (i.e., basic need satisfaction), they experience more internalized forms of motivation. This line of reasoning is consistent with previous research (e.g., Liu & Siteo, 2020; Sheldon & Krieger, 2007).

One unexpected finding that deserves discussion is that relevance in practicum was negatively related to autonomous motivation when accounting for other variables in the model. A plausible explanation is that relevance in practicum is acting as a negative suppressor. That is, when introducing the effects of other practicum factors in the model, the positive effect of relevance in practicum and autonomous motivation becomes negative. Thus, it may imply that the factor relevance in practicum clears out the variance (i.e., "irrelevant-variance cleaner") in the other practicum factors, making relevance in practicum less important (Tzelgov & Henik, 1991) for the relation to autonomous motivation at time 3. This may suggest that what is important for autonomous motivation is basic need satisfaction in practicum. Although we have conducted two path analytical models, along with follow-up analyses to check the suppressor effect, the results for this factor must still be interpreted with caution (Ludlow & Klein, 2014). One alternative speculation concerning the effect of relevance on autonomous motivation could be that relevant content and experience during practicum intensified the already established decline in autonomous motivation. This means that for students who already have a decrease in autonomous motivation from time 1 to time 3, and after including the other practicum factors, increasing the relevance only contributes to intensifying this decline, making the students more certain that they do not want to continue to become a teacher.

### **Limitations**

Several limitations are worth noting when interpreting the results from our study. First, our study had a relatively low sample size, and high attrition rates throughout the measurement points. Although high attrition rates are not uncommon in longitudinal studies (e.g., Laird, 1988), the small sample size is a concern for the scale development. Given the high amount of missing data from time-point 1–3 due to the design, no imputation could be performed. With a higher sample size, we could have performed a split of the data and conducted an explorative factor analysis and then a confirmatory factor analysis (DeVellis, 2017). Thus, caution is warranted when employing the PETE scale awaiting further validation. We recommend confirming our factor structure in a validation study with a larger sample size, testing the factorial structure, and even expanding to test for higher-order factors (e.g., interpersonal factors, structural factors, etc.).

Second, although we found mean differences between practicum length for some of the practicum factors and some relations between the subscales and motivational classes, our scale only

captured the “positive” aspect of practicum experiences. No subscale captured the “negative” side. We highly recommend adding more subscales to address this important aspect, as we believe that there might be different pathways and differential effects from positive and negative practicum experiences on motivation. Similarly, basic psychological need frustration within practicum was not measured, and future studies need to include these to see if the frustration of basic needs predicts amotivation and controlled motivation to a larger extent than the mere lack of need satisfaction, as measured in our study.

Third, we collected data from one institution in Norway. This may be a limitation that inhibits the generalization of our findings. This is important, given that there are some structural differences in how teacher education is organized across higher education institutions. We thus recommend that future studies employ more diverse sample sizes to be able to generalize the research findings to other populations and contexts. However, although we believe that our scale provides useful information for similar teacher programs in Norway, future international studies need to adapt our questionnaire to their specific context and regulations. Relatedly, given a larger sample size, we could have conducted more nuanced analyses of the different programs (e.g., short-term vs long-term practicum periods) and investigated the differential effects of practicum experiences in the different programs and changes in motivation across the semester. Future studies should conduct multigroup analyses to further understand the differences between the study programs.

Finally, we used motivational classes to assess students’ motivation, as opposed to individual motivational regulations. Although this is a theoretical decision, there has been debate concerning methodological issues regarding the measurement of classes vs. regulations (Howard et al., 2020). We recommend future studies to test motivational classes and regulations separately, to investigate how each of the approaches performs. Another suggestion is to test a bifactor model using regulations (S-factor) and classes (G-factor) simultaneously, to model the joint effect (Bureau et al., 2023).

## Conclusion

Although more research is needed to establish a stronger link between practicum experience and the differential effect of intrinsic, autonomous, controlled, and amotivated classes of motivation, our study has been a first step towards understanding how practicum during both short- and long-term periods impacts students’ various forms of motivation for continuing teacher education, an area previously understudied. A major contribution from our study is the development of a practicum scale to assess practicum experience and test its effect on motivation across a semester. Institutions can use the PETE scale to evaluate the quality of practicum, which may be relevant given some of the limitations of traditional student evaluation questionnaires (e.g., Uttl et al., 2017). Another implication is our finding of the effect of the length of practicum on the experience of practicum, which may have implications for how teacher education programs design practicum periods. For instance, our study suggests that short-term practicum periods may have less effect on certain factors, but no difference on others. Creating specific learning outcomes for the practicum period (either short or long) may be a consequence of our results.

## Author’s contributions

CREDIT: Conceptualization (LMJ, DR); Formal analysis (LMJ); Methodology (LMJ, DR, LE, ØH, EKK, ZP, MU); Writing original draft (LMJ, DR); Writing – reviewing and editing (LMJ, DR, LE, ØH, EKK, ZP, MS, MU). LMJ and DR have contributed equally. The other authors are presented in alphabetical order.

## Disclosure statement

No potential conflict of interest was reported by the author(s).

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## Appendices

### Appendix 1

Note: The wording of the items in brackets is in Norwegian.

#### Organization.

- The location of the practicum school was easily accessible from where I live [Praksisskolen jeg har vært på er lett tilgjengelig fra der jeg bor]
- The practicum school was well-prepared for my practicum [Praksisskolen var godt forberedt på min praksisperiode]
- The mentors were well-prepared for my practicum [Praksisveileder(e) var godt forberedt på min praksisperiode]
- I gained sufficient teaching experience in my school subject(s) [Jeg fikk tilstrekkelig undervisningserfaring i mitt/mine skolefag]
- It was clear to me who my practicum mentor(s) was [Det har vært klart hvem som var min(e) praksisveileder(e)]
- Organization of the practicum at the practicum school has been good [Organisering av praksis på praksisskolen har vært god]
- I received good working conditions in the school so that I could plan my teaching practicum [Jeg fikk gode arbeidsforhold i praksisskolen slik at jeg kunne planlegge min undervisning på skolen]
- It was clear who I should turn to when I had any questions during the practicum [Det har vært klart hvem jeg skal henvende meg til når jeg har hatt ulike spørsmål underveis i praksisperioden]
- I experienced that there was good cooperation between the university and the practicum school during my practicum [Jeg opplevde at det var et godt samarbeid mellom universitetet og praksisskolen i forbindelse med min praksis]
- I experienced it as being random whether the practicum turns out to be a good experience [Jeg opplever at det er tilfeldig om praksis blir en god opplevelse]

- There have been many collisions between teaching on campus and my practicum [Det har vært mange kollisjoner mellom campusundervisning og praksis]
- There has been a lot of wasted time during my practicum [Det har vært mye dødtid og bortkastet tid i praksis]

### ***Relationship with mentor***

- I received good supervision from the mentor(s) during my practicum [Jeg fikk god veiledning av praksisveileder(e) da jeg var i praksis]
- I got along well with the mentor(s) [Jeg har kommet godt overens med praksisveileder(e)]
- The mentor(s) were appreciative of my suggestions [Praksisveileder(e) lyttet til mine forslag]
- I received helpful feedback from the mentor(s) [Jeg opplevde at jeg fikk nyttige tilbakemeldinger fra praksisveileder(e)]
- I experienced that the guidance was important for achieving the learning objectives during my practicum [Jeg har opplevd at veiledningen har vært viktig for at jeg har klart å oppnå læringsmålene for praksisperioden]
- I have disagreed with the practicum mentor's teaching [Jeg har vært uenig i praksislærer sin undervisning]
- I have been supported in my attempts to handle my uncertainties [I praksisperioden har jeg blitt støttet til å prøve ut det jeg har vært usikker på]

### ***Relevance and learning in practicum***

- The practicum has been meaningful [Praksisoppholdet jeg har hatt i skolen har vært meningsfylt]
- I haven't learned much during my practicum [Jeg har ikke lært så mye nytt i praksis]
- I learned the most about being a teacher during my practicum [Det var i praksis jeg har lært mest om det å være lærer]
- I thrived during my practicum [Jeg trivdes i praksis]
- Practicum makes the teacher training more relevant [Praksisoppholdet gjør lærerutdanningen mer relevant]
- I was aware of the learning goals I must achieve in order to pass the practicum [Jeg har vært klar over hvilke læringsmål jeg må oppnå for å bestå praksis]

### ***Integration of theory and practicum***

- I applied the theoretical knowledge that was taught at the university during my practicum [I praksis har jeg prøvd ut teoretisk kunnskap som vi har arbeidet med på universitetet]
- The theoretical perspectives we have learned at the university made sense during my practicum [De teoretiske perspektivene vi har arbeidet med på universitetet gir mening når jeg er i praksis]
- My mentor(s) were interested in theoretical perspectives on learning and teaching [Mine praksisveiledere var opptatt av teoretiske perspektiver på læring og undervisning]
- I discovered the theory's relevance to teaching during my practicum [I praksis oppdaget jeg teoriens relevans for lærerarbeidet]
- I experienced that theory and practice complemented each other during my practicum [Jeg opplevde at teori og praksis utfylte hverandre i praksisperioden]

### ***Varied practicum***

- I experienced a varied practicum [Jeg har fått en variert praksis]
- I have been able to try out different aspects of the teaching profession during my practicum [Jeg har fått prøve ut ulike sider ved læreryrket i praksis]
- There were many aspects of the teaching role that I did not get to experience during my practicum [Det var mange sider ved lærerrollen jeg ikke fikk erfare i praksis]

### ***Progress of practicum***

- I think there was too much observation before I started teaching during my practicum [Jeg synes det var for mye observasjon før jeg startet egen undervisning]

- I felt that I was “thrown” too quickly into teaching during my practicum [Jeg opplevde at jeg ble «kastet» for fort inn i undervisning]
- I have been ready for the tasks I have been given during my practicum [Jeg har vært klar for de oppgavene jeg har fått i praksis]
- I experienced that the practicum facilitated my progression [Jeg opplevde at det ble tilrettelagt for progresjon i praksis]
- I experienced that the practicum has prepared me for the teaching profession [Jeg opplevde at praksis har forberedt meg på læreryrket]

### *Accepted into practicum*

- I become well-integrated into the teaching community (among the teachers) at the school during my practicum [Jeg er blitt godt integrert i praksisfellesskapet (blant lærerne) på skolen der jeg har hatt praksis]
- I felt recognized as a teacher during my practicum [Jeg følte meg anerkjent som lærer da jeg var i praksis]
- I was invited to meetings and other school activities in the same way as other teachers during my practicum [Jeg ble invitert til møter og andre skoleaktiviteter på lik linje med andre lærere da jeg var i praksis]

### *Basic need satisfaction in the practicum*

- I have taught as I desire and value during my practicum [I praksisperioden har jeg undervist slik jeg selv ønsker og verdsetter at undervisning skal være]
- I was pressured to teach a subject that I was not prepared for during my practicum [I praksisperioden ble jeg presset til å ha undervisning som jeg ikke var klar for]
- I was able to decide for myself how to teach during practicum [Jeg har vært fri til å selv bestemme hvordan jeg skal undervise når jeg har vært i praksis]
- I was able to do things constructively and achieve my goals during my practicum [I praksisperioden har jeg kunnet gjøre ting på en god måte og oppnå målene mine for praksisperioden]
- Practicum has increased my efficacy as a teacher [Praksis i skolen har gitt meg økt mestringfølelse som lærer]
- I experienced that I had mastered teaching during my practicum [I praksisperioden har jeg opplevd at jeg behersker undervisning]
- I felt closeness and inclusiveness with the mentor(s) during my practicum [I praksisperioden følte jeg nærhet og samhold med praksisveileder(e)]
- I felt recognized and valued during my practicum [I praksisperioden følte jeg meg anerkjent og verdsatt]
- I felt included during my practicum [I praksisperioden følte jeg meg inkludert]

## **Appendix 2**

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### Organization

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The location of the practicum school was easily accessible from where I live  
**The practicum school was well-prepared for my practicum**  
 The mentors were well-prepared for my practicum  
 I gained sufficient teaching experience in my school subject(s)  
 It was clear to me who my practicum mentor(s) were  
**Organization of practicum at the practicum school has been good**  
 I received good working conditions in the school so that I could plan my teaching practicum  
 It was clear who I should turn to when I have had any questions during the practicum  
**I experienced that there was good cooperation between the university and the practicum school during my practicum**  
 I experienced it as being random whether the practicum turns out to be a good experience  
 There have been many collisions between teaching on campus and my practicum  
 There has been a lot of wasted time during my practicum (R)

**.83.92.61**

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(Continued)

Continued.

Organization		
Relationship with mentor	<b>I received good supervision from the mentor(s) during my practicumI got along well with the mentor(s)The mentor(s) were appreciative of my suggestionsI received helpful feedback from the mentor(s)I experienced that the guidance was important for achieving the learning objectives during my practicumI</b> have disagreed with the practicum mentor's teaching (R) <b>I have been supported in my attempts to handle my uncertainties</b>	<b>.89.76.84.83.81.61</b>
Relevance in practicum	<b>The practicum has been meaningful haven't learned much during my practicum (R)I learned the most about being a teacher during my practicumI thrived during my practicumPracticum makes teacher training more relevantI</b> was aware of the learning goals I must achieve in order to pass the practicum	<b>.92.77.73.83.75</b>
Integrate theory and practicum	<b>I applied the theoretical knowledge that was taught at the university during my practicumThe theoretical perspectives we have learned at the university made sense during my practicumMy mentor(s) were interested in theoretical perspectives on learning and teaching. I discovered the theory's relevance to teaching during my practicum.I experienced that theory and practicum complemented each other during my practicum.</b>	<b>.73.63.51.89.90</b>
Basic need satisfaction in practicum	<b>I have taught as I desired and valued during my practicumI</b> was pressured to teach a subject that I was not prepared for during my practicum (R) <b>I was able to decide for myself how to teach during the practicumI was able to do things constructively and achieve my goals during my practicumPracticum has increased my efficacy as a teacherI experienced that I had mastered teaching during my practicumI</b> felt a sense of closeness and inclusiveness with the mentor(s) during my practicum	<b>.74.63.78.74</b>
Included	<i>Accepted in practicumI became well-integrated into the teaching community (among the teachers) at the school during my practicumI felt recognized as a teacher during my practicumI was invited to meetings and other school activities in the same way as other teachers during my practicumRelatedness (Basic need satisfaction in practicum)I felt recognized and valued during my practicumI felt included during my practicum</i>	<b>.77.83.81.621.01.93.92</b>

Note: Only retained items (in bold) and factor loadings are shown after the CFA.

For Included, the first-order factor loadings are shown as well. R indicates reversed-coded items.