

Antecedents of Norwegians Student Teachers' Campus Time on Task

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Abstract. Many evaluations have shown that Norwegian student teachers spend little time studying. In this research, we investigate the influence of selected antecedents of student teachers' time on task, based on survey data and structural equation modelling. The main finding is that student self-discipline and the level of external academic pressure stand out as significant predictors of student time on task. This is particularly evident regarding the time on task in individual studies and student-led colloquiums. The type of teacher education programme also appears to be of significance. This is mainly explained by a higher reported average time at lectures and teacher-led seminars at university colleges than at universities. If a low level of time on task is regarded as a problem, a tightening of work requirements in the campus-based elements of teacher education could be a possible remedy.

Keywords: time on task; student teachers; self-discipline; motivation; teacher education.

Introduction and the context of Norwegian teacher education

All teacher education in Norway during recent years has been criticised in expert assessments (The Panel for Teacher Education Reform, 2014; The Norwegian Agency for Quality Assurance in Education, 2006; Haug, 2008; Lid, 2013) and through newspaper articles penned by student teachers. The criticism in evaluations has emphasised low time on task among students (Lid, 2014), a

lack of relevance in the campus-based part of the course and a lack of continuity and connection between the campus-based course and practicum (Lid, 2013). Time on task in this article denotes the sum of the students' activities devoted to their studies in the campus-based part of the teacher-education programme: lectures, student-led colloquiums, teacher-led seminars and individual studies. Thus, educational authorities put pressure on teacher education (Ministry of Education and Research, 2014). Within the upper-level education course and practical-pedagogic training, students typically rank the practicum significantly higher than campus-based teaching (Finne, Mordal & Stene, 2014). The criticism is directed especially towards the education course entitled 'Pedagogy and Pupil Understanding'.¹ Many students believe that the integration between campus teaching and practicum is weak. Lid (2013) also finds the same patterns. Students following the primary and secondary-school teacher education also value the practicum elements more highly than the campus-based education; in comparison with earlier measurements, the 'Pedagogy and Pupil Understanding' subject is less favoured than the teacher-education subject formerly known as 'Pedagogy' (Finne, Mordal & Stene, 2014). We thus cannot isolate the question of a low degree of time on task from that of relevance.

Criticism of Norwegian teacher education is not a recent phenomenon. It crops up regularly in newspaper articles and blogs (e.g. Vedeler, 2010; Barbogen, 2011; Vasli, 2011). In one newspaper article, a teacher education student described how he gained the next-to-the-highest grade by only reading one book and attending only one lecture (Vassli, 2010). Another reader comment advised a student to give up the pedagogic part of the university teacher education course because it was inadequate (Moen, 2014). One aspect that has received criticism is a lack of unity and connection in the course (Lid, 2013; Hammernes, 2013). Teacher education institutions have replied that measures have been implemented to create a stronger connection between theory and practice (Vedeler, 2014), including the use of an examination structure based on video cases using practical teaching situations and more frequent alternation between theoretical teaching and school-based practice (Lund, Bakken & Engelién, 2014). However, it does not appear that these changes have so far led to significantly higher time on task.

How much student teachers learn from their own studies depends, amongst other things, both on how much time is actually spent on studying and how much effort student teachers put into their studies. The relationship between time on task and performance is complex (Rosenshine & Berliner, 1978; Brophy, 1986), but there is a widespread acknowledgement that it is not a linear relationship (Gettinger, 1986). If the student teacher does not work in an effective and efficient manner, there will not necessarily be a clear relationship between time on task and performance. But it is difficult to envisage progress in learning without the student in question spending sufficient time studying. Time on task is a prerequisite for learning in campus-based teaching. For this reason,

¹ Bronkhorst et al. (2014) have identified similar resistance to pedagogy courses in many countries.

we argue that a reasonably high time on task in the campus-based part of the teacher-education course and learning intentions is an important prerequisite for the proper functioning of a campus-based course. In other words, it should: (1) equip the student teacher with skills and tools to teach academic subjects and to lead pupil learning and (2) contribute to future adaptability, so students will be able to relate to changes in the mandate for professional teaching activities (Darling-Hammond, 2006).

Society will expect that student teachers during their time on campus will work on their studies to an extent that more or less equates to a normal work week for a full-time employee. In general, Norwegian students spend less time on their studies than students from other Nordic countries (Statistics Norway, 2014). What studies of teacher-education programmes are silent about explains the student teachers' time on task. Conversely, there are isolated accounts of time on task amongst students in a large number of courses, including different kinds of teacher education courses.

The purpose of the present study is to explore the impact of selected factors on student teachers' time on task.

Teacher education programmes in Norway

Teacher education in most national systems is a rather complex programme consisting of a degree in an academic subject (such as mathematics, chemistry, physics etc.) and pedagogic education, which in a more direct sense prepares the student for professional life in a school context (Darling-Hammond & Lieberman, 2012). In Norway, there are two types of programmes typically offered by university colleges and three university programmes in teacher education. University college programmes qualify students for teaching in either grades 1 through 7 or 5 through 10. Both these programmes are based on a campus-based teacher education model: theories are met on campus and afterwards applied in schools. These programmes are also offered by some of the newer universities, which used to be university colleges. However, for simplicity, we refer to them here as university college programmes. Until 2017, these programmes will be four-year integrated academic degree programmes (planned to be re-shaped as five-year master's degree programmes in 2017). Universities mainly have three teacher programmes. In the first, students apply for a five-year integrated programme, where students specialise in a subject (i.e. history, mathematics, science), which is taught over the five years. In the second, students take a one-year teacher education course after finishing subject-oriented bachelor's and master's degrees. Third, 'Teach First' is a two-year specially designed programme for carefully selected candidates (Nesje, 2014). Campus-based teaching is reduced in this programme, and the schools' responsibility for the practice-based element of teacher education is correspondingly increased. Student teachers take full responsibility for a classroom after a six-week summer course. However, they have ongoing and close supervision during their practicum.

Time use regarding students' learning in Norway

Table 1 shows the average total time use on studies reported by students attending different types of full-time programmes in Norway, according to the Norwegian quality assurance agency for education (Lid, 2014). The survey was conducted in the autumn of 2013 and sent out to all bachelor's and master's students in Norway. The table shows a large variation between the different categories of study programmes. Architecture and medicine are found at the top, while teacher programmes are found below the average. However, the survey also shows a large variation among the different teacher education programmes. The highest value for a teacher programme is approximately at the level of medicine in Table 1. Therefore, it is of much interest to study antecedents of student teachers' time on task. The normal full-time work week in Norway is 37.5 hours; i.e. only a few of the reported averages in Table 1 are at or above this number.

Table 1: Total time use (hours/week) for study programmes in Norway. Source: Lid (2014).

Study programme	Time used
Architecture	43.1
Medicine	37.0
Civil engineering	35.6
Arts, design, music	33.7
Engineering	33.1
Science and math	32.6
Law	31.5
Nursing	29.8
Psychology	29.2
5-year teacher programmes	28.0
Economics/business	27.3
Political science	25.9
Humanities	25.4
Kindergarten teaching	25.3
Primary teacher	25.2
Languages	23.7
General education	23.1
All programmes	29.0

The *raison d'être* of teacher education is that student teachers should qualify for the work life of teachers (Darling-Hammond & Lieberman, 2012). To a large extent, the quality of the education will depend on the quality of the student intake and on the progress made by the student teachers during the course of their studies. Learning progress induced by the education programme (value added) is dependent on the quality of the campus-based courses, the personal talent of the student teachers for carrying out the tasks associated with the teaching profession, the quality of the supervision received by students in their school-based practicum and – not least – their own learning activities. It is difficult to isolate the significance of any one individual factor in a way that will

give unambiguous information about the quality of a teacher education programme (Calderhead, 1991). Nevertheless, in this article, we will restrict the scope to focus on student teachers' time on task on campus, and we will explore factors that may be of significance for inducing time on task.

Theoretical framework and research hypothesis

Lectures, student-led colloquiums, teacher-led seminars and individual studies (time on task in the campus-based part of the teacher-education programme) are important to attaining the goals promoted by the campus-based programme. Various kinds of explanations exist regarding why student teachers – like other groups of students – study. The motivation of student teachers regarding their studies is considered an important topic (Roness & Smith, 2009). Motivation entails having goals for one's own actions. Motivational researchers divide motivation into a continuum of various categories such as intrinsic and extrinsic motivation. Intrinsic motivation denotes the inner drive to carry out a task (Deci, 1975; Ryan & Deci, 2000), for instance a desire on the part of the student teacher to become a teacher because he or she has a desire that pupils should learn or due to a feeling that the profession itself is exciting. This line of thinking forms the basis of our first hypothesis: intrinsic motivation in study situations predicts a student teacher's time on task.

Self-determined extrinsic motivation is also of interest for time on task. Achievement goal motivation is a concept that is concerned with comparing one's own performance with that of others (Pintrich, 2000). In teacher education, the student teacher's performance during his or her practicum is judged according to the grades pass or fail. In connection with education-based activities on campus, Norwegian student teachers are assessed in several exams according to a six-stage graded scale in which A is the highest and F, the lowest. Grade statistics indicate that the majority of grades awarded clump around the mid-range. Achievement goal motivation, however, can also be of significance *during* the course of study rather than just at the end of it (Ashton, 1984). For instance, seminar leaders may indicate an implicit evaluation of student performance at the same time, as fellow students will draw conclusions about the skills of a student on the basis of their own interpretations of the student's behaviour in formal and informal contexts. In such situations, achievement goal motivation can be significant even if no explicit grade is awarded at that stage of the study (Roness & Smith, 2009). Many studies have shown achievement goal motivation to be significant in terms of behaviour (Senko et al., 2011). Therefore, an evidently interesting hypothesis – no. 2 in this study – is: achievement goal motivation in study contexts predicts student teachers' time on task.

Many studies document that self-discipline is of great significance for the completion of studies, study performance and so on (Baumeister & Tierney, 2011). Self-discipline can be understood as a more or less permanent personality feature of an individual. No one, however, is completely locked into a personality; with the exception of quite extraordinary situations, everyone has options, and as such, the opportunity to change their own patterns of behaviour. Self-discipline can, thus, be regarded as a force within each individual that is

significant for his or her ability to complete the course of study. Our third hypothesis is: the actual personality feature of self-discipline predicts time on task in on-campus teacher-education studies.

So far, the factors that we have taken into consideration can be regarded as qualities of an individual student: motivation and self-discipline. Time on task on the part of student teachers can, however, also be understood as a response to the demands and tasks imposed by the course on student teachers as a part of the study programme (Darling-Hammond & Lieberman, 2012). For instance, some sections of the teaching programme can consist of submitted activities that will be marked and assessed by the academic staff of the university or college. The lecturers can specify their demands regarding effort by means of comments on student performance and compulsory submissions. These demands represent the institution's expectations expressed through the curriculum, requirements and tasks to be completed. To identify aspects of the teacher programme that generate effort in the form of time on task, we investigate how this is seen in the teaching course's self-determined activities (private study) and activities that are laid down by the university/college as compulsory activities. Our fourth hypothesis is: external academic pressure will predict study effort and, thus, time on task.

Previous evaluations have indicated that there are certain differences in quality between the teacher-education variants offered by the universities and the university colleges (Rones & Smith, 2009). These evaluations form the basis to explore whether there are significant differences between universities and university colleges regarding student time on task.

Empirical survey methodology

Samples and procedures

The reported analysis is part of a research project in which Norwegian student teachers' preferences (such as motivation, self-discipline, perceived support from supervisors etc.) are examined. A questionnaire was distributed to Norwegian teacher students in selected institutions (university colleges and universities). The surveys included the following (table 3):

1. One-year undergraduate teacher education programme for candidates with a vocational or general academic educational background
2. Integrated five-year senior-teacher education programme at university
3. Primary teacher education programme (for teaching in grades 1-7)
4. Primary/secondary teacher education programme (for teaching in grades 5-10)
5. General teacher education programme (for teaching in grades 1-10), i.e. the old model

The survey was carried out during spring and autumn 2013. Data collection was carried out in the following two ways:

(1) Students following the senior-teacher programme and the teacher education programme at a university, as well as primary/secondary/general teacher students at a university college, were given the paper-based questionnaire during obligatory seminar teaching. The students were informed that participation was voluntary and that they could withdraw from the survey at any point. None of the students who were present declined to take part in the survey. The response rate was 100%.

(2) The other part of the sampling procedure was based on an electronic survey. Students at four Norwegian university colleges with primary/secondary/general teacher programmes took part in an electronic questionnaire run by the firm Advicia. The researchers were given the e-mail addresses of the student teachers by the teacher-education institutions, and Advicia sent the electronic questionnaire to these email addresses.

It is not possible to estimate the exact response rate within this sample because many students were not users of the institutionally allocated e-mail addresses at two schools. A comparison of gender and age shows that this sample is well aligned with the characteristics of the general population of student teachers at the university colleges. A further validation was done via the comparison of measures of time on task in our investigation. A similar investigation of time on task was undertaken by the Norwegian Agency for Quality Assurance in Education in the survey previously mentioned (Lid, 2014). The average measures are quite similar. These validation efforts indicate that some characteristics of our sample from the electronic questionnaire are well aligned with similar characteristics of the reference population among Norwegian student teachers. In total, 635 students responded. The analysis is based on 432 responses (311 women and 121 men) after the removal of missing values. University college students contributed 270 responses, while 162 responses were from university students.

Measurement instruments

A questionnaire was constructed based on measurement instruments previously reported in the literature, as well as new developments (table 2). In the survey, student teachers responded to items on a seven-point Likert scale in which the middle numeral 'four' represented a neutral midpoint. The concepts were measured with two to three single items. The analysis reported in the following is based on five measurement instruments. The internal consistency (Cronbach's alpha) for each of the concepts is satisfactory; Cronbach's alpha is between .71 and .82. In addition, the mean inter-item correlations indicate the measurement error (the reliability) of one single item for each concept. The indicators, Cronbach's alpha (α_c) and the item reliability for each concept, are as follows:

Table 2: Overview of constructs, items, Cronbach's alpha and item reliability

Concepts and indicators	Cronbach's alpha	Item ¹⁾ reliability

Intrinsic motivation, IM	.71	.55
I want to be a teacher because:		
I want others to be interested in working with children because teaching young people is meaningful		
Achievement goal motivation, PM	.78	.65
It is important to me:		
to be looked up to by the other students.		
to be described as the best in the study group.		
Self-discipline, SD	.81	.58
I generally complete assignments with plenty of time before the deadline.		
Even though I allocate time for studying, I don't manage to get it done. ²⁾		
I often put off the things I have to do until the last minute. ²⁾		
External academic pressure, HE	.82	.70
Compared with high school, study requirements are greater in teaching classes.		
Compared with high school, I have to use more time to keep up with my teaching classes.		
Institution category, w1		
University: 0 and University College: 1		
Time on task, TT		
Lectures		
Student-led colloquiums		
Teacher-led seminars		
Individual studies		
¹⁾ Mean inter-item correlations	²⁾ Reversed	

Analysis

Structural equation modelling (SEM) was used to analyse the relationships between the variables. SEM is suitable for confirmatory factor and path analyses. Assessments of fit between model and data are based on the following indices: root mean square error of approximation (RMSEA), normed fit index (NFI), goodness-of-fit index (GFI) and comparative fit index (CFI). An RMSEA of <.05 and NFI, GFI and CFI of >.95 indicate a good fit; an RMSEA of <.08 and NFI, GFI and CFI of >.90 indicate an acceptable fit (Kline, 2005).

The measurement and structural models were estimated with IBM SPSS Amos 21. The values of the RMSEA, NFI, GFI and CFI indicate that the structural models in figures 1 through 4 have an acceptable fit.

Empirical results

Figure 1 shows the distribution of total time on task (tt) at the student level. The figure shows that the average time use in the sample is close to the average for student teachers in the previously mentioned Norwegian Agency for Quality Assurance in Education student barometer survey (See Table 1). This means that the average is rather low, with a value of only 26.1 hours per week. As previously mentioned, the normal full-time work week in Norway is 37.5 hours per week.

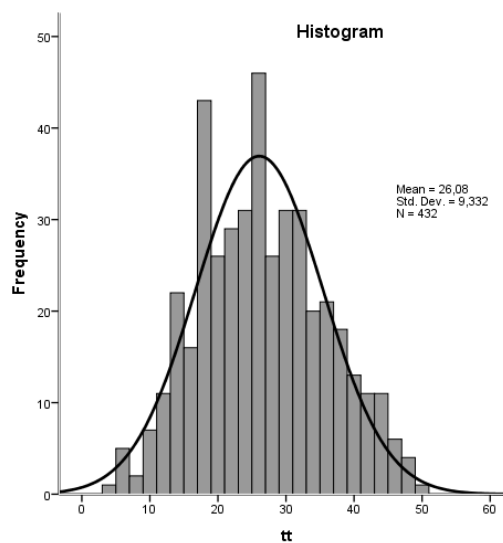


Figure 1: Distribution of total time use (hours/week), N=432

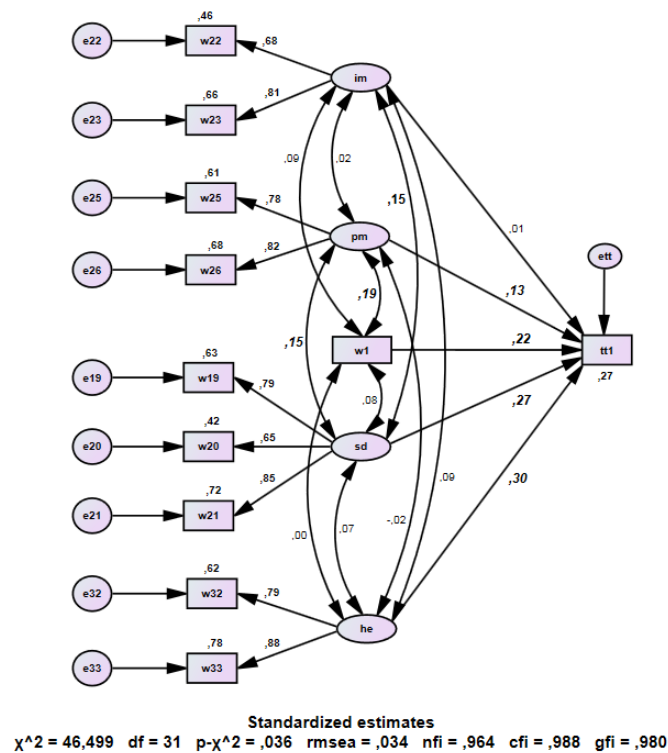
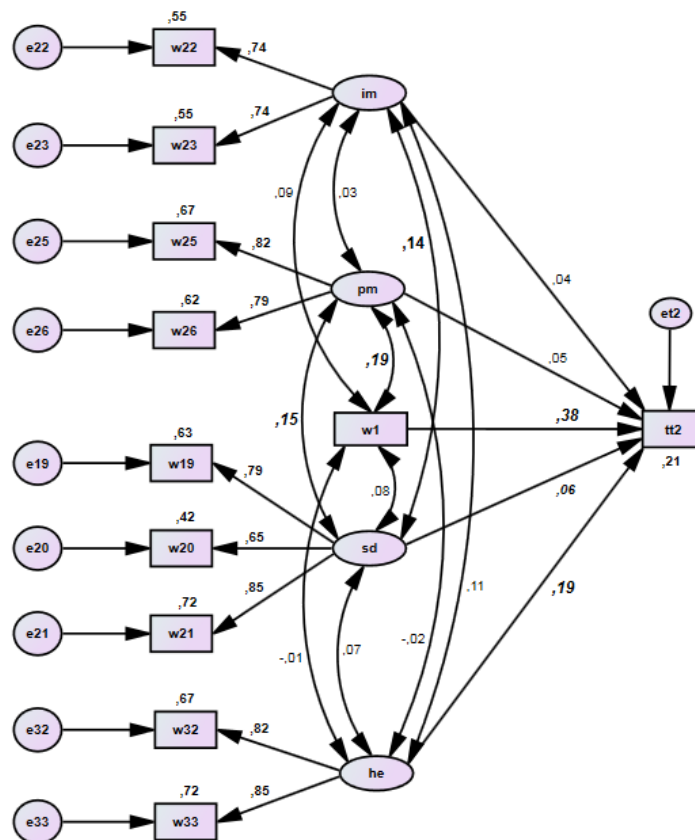


Figure 2: Antecedents of student teachers' total time on task: im=intrinsic motivation, pm=achievement goal motivation, sd=self-discipline, he=external academic pressure, tt1 = total time on task in studies, w1=institution; 0=university and 1=university college. Significant path coefficients and correlations are in bold italics, N=432.

Figure 2 shows antecedents of student teachers' reported total time use regarding their studies. The figure shows the strongest effects of external academic pressure (.30) and self-discipline (.27). A moderate effect concerning the institutional category is also found (.22).



Standardized estimates
 $\chi^2 = 48,629$ $df = 31$ $p\text{-}\chi^2 = ,023$ $rmsea = ,036$ $nfi = ,962$ $cfi = ,986$ $gfi = ,980$

Figure 3: Antecedents of student teachers' total time use regarding lectures and teacher-led seminars: *im*=intrinsic motivation, *pm*=achievement goal motivation, *sd*=self-discipline, *he*=external academic pressure, *tt2* =time on task on lectures and teacher-led seminars, *w1*=institution; 0=university and 1=university college. Significant path coefficients and correlations are in bold italics, $N=432$.

Figure 3 shows antecedents of student teachers' reported time use regarding lectures and teacher-led seminars, i.e. activities directly initiated by the institution. The figure clearly shows the strongest effect in the institutional category (.38). A moderate effect concerning external academic pressure is also found (.19).

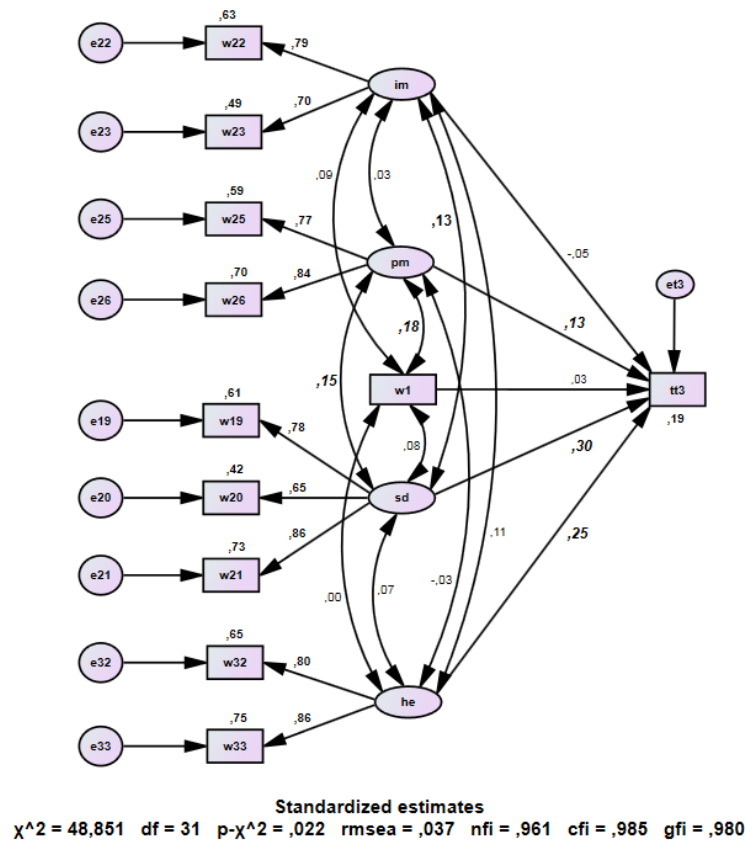


Figure 4: Antecedents of student teachers' total time use regarding individual studies and student-led colloquiums: im=intrinsic motivation, pm=achievement goal motivation, sd=self-discipline, he=external academic pressure, tt3=time on task on individual studies and student-led colloquiums, w1=institution; 0=university and 1=university college. Significant path coefficients and correlations are in bold italics, N=432.

Figure 4 shows antecedents of student teachers' reported time use regarding individual studies and student-led colloquiums, i.e. student-initiated activities. The figure clearly shows the strongest effects concern self-discipline (.30) and external academic pressure (.25).

Table 3: Gender, type of institution and year of study.

	Number and (%)	Number and (%)	Number and (%)	Number and (%)	Number and (%)
Gender	Male: 126 (29.2%)	Female: 306 (70.8%)			
Institution	University: 158 (36.6%)	University college: 274 (63.4%)			
Year of study	1st year: 162 (37.5%)	2nd year: 42 (9.7%)	3rd year: 102 (23.6%)	4th year: 96 (22.2%)	5th year: 26 (6%)

Discussion and implications

A main finding of this study is that student self-discipline and the level of external academic pressure stand out as significant predictors of students' time on task (table 4). This is particularly evident regarding time on task in individual studies and student-led colloquiums.

The type of teacher education programme also appears to be of significance for the total time on task. This is mainly explained by a higher reported average time use regarding lectures and teacher-led seminars at university colleges than at universities. University college courses seem to demand a bigger workload from student teachers, regarding the submissions and seminar presentations that form part of teacher-education programmes. However, the difference between university programmes and those of university colleges is not significant in the self-initiative part of teacher courses. University college programmes make greater demands of student teachers than university courses do: the higher time on task in university college programmes is a response to the extent of the work demand.

To give an overall perspective of what we term antecedents of time on task, self-discipline is the personal factor that is most strongly associated with time on task. This finding, however, does not apply to all study activities. Self-discipline and motivation (both intrinsic and achievement goal motivation) are only weakly associated with time on task in the case of institutionally initiated learning activities. One interpretation of this is that it is the demands of activities on the education programme itself that has the greatest catalytic effect for actually completed time on task. In the case of self-study activities, the picture is different. In this case, self-discipline is moderately strongly associated with time on task, while achievement goal motivation has a rather weaker association with time on task. Intrinsic motivation, by contrast, is not associated with time on task in the case of self-study. Primarily, self-discipline stands out as a significant factor in connection with self-studies. For many believers in the primary significance of intrinsic motivation, it may seem surprising to find that intrinsic motivation does not appear to be a significant driving force regarding time on task. This result is in contrast to a number of other studies describing the significance of motivation in teacher education, meaning that we need more research on the significance of motivation concerning study effort (e.g. Roness & Smith, 2009).

There are obvious and clear weaknesses in the self-reporting on which our measurements rely. An objective confirmation of time spent studying (such as electronic registration of when people actually are occupied with studies) could have improved measurements of time on task. However, self-reporting is the dominant approach in time-use studies in general. Irrespective of this question, however, the particularly low estimate of time on task in teacher education when compared with other study programmes represents a clear challenge for universities and university colleges. Despite its flaws, self-reporting does express estimates that can be regarded as relevant indicators of time on task. Our estimate for the teacher-education courses as a whole and for the individual

teacher-education variants corresponds very closely with equivalent measurements made by the Norwegian Agency for Quality Assurance in Education (Lid, 2014). There is no reason to believe that student teachers in the Norwegian Agency for Quality Assurance in Education's survey would understand the questions that were put to them differently from any other group of students (However, these estimates are contested: See Martinussen & Smestad, 2011). We, therefore, place a reasonable degree of trust in the measurements of time on task being an acceptably valid and reliable indicator of study input.

As indicated before, a normal work week in Norway consists of 37.5 hours. The estimated measurements of time on task for the various teacher programmes are lower than those that society should expect. Our study suggests that teacher-education institutions ought to place an emphasis on more external academic pressure on the students, make more demands in terms of coursework and provide feedback to assignments so poor achievement will not be tolerated. Student teachers, in fact, receive better grades than nursing students and engineering students but have lower time on task (The Panel for Teacher Education Reform, 2014). The possibility of failure may be a necessity to ensure that students take their studies sufficiently seriously. Such a conclusion, however, is controversial and runs counter to some core results in motivational research. We need more research in this respect to arrive at a conclusion regarding this question on a better qualified basis than we are able to do here. Raising demands in a way that can lead to failure (or drop-out) is, however, a strategy that, within the Norwegian educational financing system, would potentially punish teacher-education institutions in the short term (Only successfully completed student exams generate variable income for teacher-education institutions).

It is an open question whether measures that generate greater time on task actually contribute to solving actual challenges of relevance in terms of teacher-education institutions, as mentioned in the introduction to this article. Even the teacher-education programme with the highest average time on task (for teachers in years 1-7) has encountered strong criticism in public evaluations (The Norwegian Agency for Quality Assurance in Education, 2006). In other words, greater time on task is not a magic formula to solve the many and considerable challenges facing the teacher-education programmes. We, nevertheless, focus on a limited aspect of teacher education here because study input is an important *prerequisite* for attaining results. Study input itself does not guarantee that a student during the course of his or her subsequent working life will ever actually make use of the skills with which their studies have provided them.

The field of educational science is influenced by shifting trends. One powerful trend over the last few years has been the so-called situated learning model (Korthagen, 2010), which assumes that learning takes place in the same context in which it is experienced. The socio-cultural theory (Brown, Collins & Duguid, 1989) assumes that the learner should be enculturated by more experienced professionals. These theoretical models suggest that practicum is a particularly valuable arena as an introduction to teaching culture, while campus-based

teaching is often regarded as an artificial arena in which to acquire teaching skills. It has been suggested that exams in which the candidate is not allowed to take in resources or aids are an artificial situation, while exam preparation can lead to an intensification of study activity that has no benefit to learning for real-life situations. The claim is that exams based on authentic working situations are a better examination form than those in which brought-in resources are not permitted. A number of innovations have taken place in the field with the purpose of attaining a better coupling between theory and practice, such as a more frequent alternation between campus-based and school-based teaching, case-based examinations, MOOC etc. (Jahreie & Ludvigsen, 2007; Rasmussen & Ludvigsen, 2009). Reconfiguring teacher education in such a direction has its supporters in the Norwegian teacher-education debate. From a standpoint of this sort, our proposal of higher external academic pressure as a means of increasing time on task amongst student teachers can appear unconvincing. It may appear that giving exam takers a video case situation, permitting all available resources for help, can be regarded as insufficiently challenging to make student teachers realise that they need to make more effort during the course of their educational studies. This is a question that must be resolved in future research projects. Our evidence makes it difficult to avoid the conclusion that the examination ought to seem sufficiently demanding to ensure that the study effort will match society's expectations regarding study input in a full-time course. For this reason, we regard an increase in demands and external academic pressure – in terms of the examination and of the course as a whole – as an essential element in a turn-around operation for teacher-education programmes in Norway.

For some individuals, criticism of Norwegian teacher-education programmes will raise the question of whether universities and university colleges are the correct institutions in which to operate such programmes (e.g. Paulsen, 2014). We are aware that the Norwegian Association of Local and Regional Authorities regards local authorities and county councils as being equally capable of running teacher-education programmes as educational institutions (the Norwegian Association of Local and Regional Authorities, 2013; the Norwegian Association of Local and Regional Authorities/Ministry of Education, 2014). This concept is not without its grounds in real life: the Oslo city council is an active partner in the 'Teach First Norway' teacher-education programme, together with the University of Oslo and Statoil. It is not a law of nature that universities and university colleges must occupy the teacher-education role in the future. Other models that tone down the role of academic institutions are as conceivable as future solutions (Lunenberg & Korthagen, 2009). Alternative teacher certification programmes are increasingly implemented in several countries (Consuegra, Engels & Struyven, 2014). However, in those countries in which campus-based teaching has been reduced and the responsibility of the schools for the practice-based element of teaching education is correspondingly increased, a number of problems and challenges have arisen (Grossman, 1989; Edwards & Protheroe, 2003; Kwakman, 2003; Ball & Forzani, 2009; Consuegra et al., 2014). These experiences do not so far provide an empirical basis on which to claim that schools or local authorities would be capable of operating teacher-

education programmes more successfully than universities or university colleges.

Limitations of the Study

There are several limitations to this study. This type of analysis has limitations from a conceptual perspective (parsimonious modelling) and in terms of its methodological (cross-sectional) approach. We acknowledge these limitations and argue that they can serve as a point of departure for future research. One limitation of this study is the use of self-reported questionnaire data. The subjective component of such data is undeniable. Only a limited number of concepts were examined. A final limitation is the sample of student teachers. The exact response rate of the e-mail survey was difficult to determine because of the inactive use of e-mail addresses. Due to this shortcoming, we cannot be sure that our sample is representative for the whole population of student teachers in Norway. In sum, these shortcomings provide a direction for future research. Future studies could also include other, or a broader spectrum of, explanatory variables than we have done in the present study.

Conclusion

Despite its shortcomings, this study may contribute to our understanding of antecedents of student teachers' time on task. If the associations represent causal relationships, the conclusion regarding this question must be that both the campus-based teaching and the teaching-practice element within the schools face challenges respecting the ambition to professionalise teaching (table 4). In our opinion, one of the requirements must be to increase the external academic pressure with the purpose of increasing time on task. Study input will, in any event, be an important prerequisite for legitimising society's use of resources in teacher-education programmes. One implication of this study is that, if a low level of time on task is regarded as a problem, a tightening of the work requirements in the campus-based elements of teacher education would be a possible remedy. The self-discipline of student teachers is the personality factor that is most strongly associated with time on task, whilst the motivation of student teachers is relatively weakly associated with time on task. Self-discipline appears to be of considerable significance to student teachers' self-managed study. An unanswered question is whether teaching self-discipline strategies or other institutional arrangements would sustain time on task.

Table 4
Overview of results related to the hypotheses and the exploratory question (T=total time-on-task; L=lectures and teacher led seminars; I=individual studies and student led colloquiums)

	Wording	Supported?
Hypothesis 1	Intrinsic motivation in study situations predicts student teacher's time-on-task	T,L,I: no support
Hypothesis 2	Achievement goal motivation in study contexts predicts student teachers' time-on-task	T, I: supported L: no support
Hypothesis 3	The actual personality feature of self-discipline predicts time-on-task in the on-campus teacher-education students	T,I: supported L: no support
Hypothesis 4	The external academic pressure will predict study effort and thus time-on-task	T,L,I: supported
Exploratory question	Are there are significant differences between universities and the university colleges regarding student time-on-task?	I: no difference T,L: difference

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