

THE ROOTS OF PROSPECTIVE TEACHERS’ INSTRUCTIONAL EFFICACY IN CAMPUS EXPERIENCES AND FIELD EXPERIENCES

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Abstract

Sufficient self-efficacy is useful for prospective teachers to put themselves on the track of continued efforts to improve their teaching skills. This study explored the strength of statistical associations between 1438 Danish prospective teachers’ campus experiences as well as field experiences and their instructional self-efficacy beliefs. Survey data analysis was carried out using structural equation modelling. The results showed that discipline problems were negatively related to self-efficacy in classroom management, while the perceived relevance of subject didactics was positively related to both self-efficacy in classroom management and self-efficacy in pupil engagement. Supervisors’ personalised formative feedback was also positively related to instructional self-efficacy. The perceived relevance of the subject education theory was positively related to self-

efficacy in pupil engagement but not classroom management. The implications of this study for practice and future research are addressed.

Keywords: prospective teachers; self-efficacy in classroom management; self-efficacy in pupil engagement; Denmark; supervision.

1. Introduction

Teacher efficacy is used to describe teachers' beliefs in their capacity to bring about desired pupil outcomes. The efforts that teachers put into teaching, their desired results, their perseverance and resilience in spite of difficulty or opposition are affected by teachers' self-efficacy beliefs (Tschannen-Moran, Woolfolk Hoy & Hoy, 1998). Bandura's self-efficacy theory is an influencing theoretical framework for understanding prospective teachers' (as well as ordinary teachers') efficacy beliefs in their teaching. Prospective teachers' sense of instructional self-efficacy is often understood as a prospective teacher's belief that he or she can reach even the most difficult pupils to learn (Pendergast, Garvis & Keogh, 2011; Skaalvik & Skaalvik, 2010).

During the early stages of learning, efficacy beliefs are considered most malleable, and as a result, the long-term development of teacher efficacy depends heavily on the first field experiences in teacher education programmes (Woolfolk Hoy & Burke-Spero, 2005). Sufficient instructional self-efficacy could be useful for prospective teachers to put themselves on the track of continued efforts to improve their teaching skills. Woolfolk Hoy and Burke-Spero (2005) found that prospective teachers' instructional efficacy tends to increase in their personal sense of efficacy as a result of field experiences in teacher education programmes and that instructional efficacy grows from real success with pupils in prospective teachers' field experiences.

The purpose of this study is to explore the statistical associations between prospective teachers' field experiences and instructional efficacy on the one hand and campus-based education and instructional efficacy on the other hand. The context is Danish teacher education programmes Denmark for primary and lower secondary schools. The rationale for teacher education in Denmark is the need to prepare prospective teachers for teaching jobs by making coherence between campus and field experiences. We discern instructional efficacy into self-efficacy in classroom management and self-efficacy in pupil engagement. Further, we discern sources of instructional efficacy into campus courses as well as pupils' problem behaviours and supervisor support.

2. Literature review

Teacher preparation programmes should provide environments where prospective teachers can develop their teaching skills. The concept of self-efficacy was introduced by Bandura (1977) as an evaluation of a person's ability to achieve an intended performance level in a given endeavour. He presumed that the motivating force to act, efforts channelled towards an undertaking and the ability to persevere with setbacks or obstacles are all driven by the strong mechanism of the belief in one's abilities. We investigated the roots of pupil-teacher self-efficacy, defined as the 'beliefs [in]one's capabilities to organise and execute the courses of actions required to produce given attainments (Bandura, 1997, p. 3). Instructional self-efficacy varies among teachers and prospective teachers (Klassen & Chiu, 2010). Low self-efficacy due to a lack of peer support is perceived as a problem (Organisation for Economic Co-operation and Development, 2014). Prospective teachers with high self-efficacy beliefs are some times expected to be more effective teachers than those with low self-efficacy (Bates et al., 2011; Leader-Janssen & Rankin-Erickson, 2013). However,

although positive teacher efficacy, (i.e., confidence in one's teaching efficacy), has been viewed as the appropriate goal, also dangers in high instructional efficacy among prospective teachers have been highlighted. For instance, doubts about teaching efficacy by teachers could impact teacher learning. This issue is discussed in the end section.

Among the various types of teacher efficacy, classroom management efficacy was found to be distinct by Emmer and Hickman (1991). So we discerned self-efficacy in classroom management as a special category. Further, we recognise another category of instructional self-efficacy: self-efficacy of learners' engagement in the classroom (Skaalvik & Skaalvik, 2012). Prospective teachers can find handling situations requiring both academic awareness and behaviour correction very challenging (Stoughton, 2007). Self-efficacy in classroom management is important as Danish pupils are unruly and lack discipline, sometimes making classrooms noisy. Prospective teachers may experience demanding discipline problems (Kounin, 1971) during their teaching practice. They have a weak position when attempting to manage unruly classrooms as their positions are temporary, and they do not have the power to decide marks. Consequently, prospective teachers alone in the classroom often have to manage quite demanding situations, which can be seen as opportunities for classroom management training. However, if these situations are too demanding, they might negatively influence prospective teachers' self-efficacy in classroom management. This leads to hypothesis 1: *Discipline problems during teaching practice are negatively related to self-efficacy in classroom management.*

Discipline problems may make significant cognitive demands on prospective teachers' awareness (Moos & Pitton, 2014). Pupils' cognitive activity during lessons is highly prioritised in the curriculum guidelines for the Danish

folkeskole. Prospective teachers, therefore, have to work hard to engage their pupils in cognitive and often collaborative activities (e.g. projects, group work and laboratory activities) through their teaching. However, discipline problems during teaching practice might be very challenging for prospective teachers' mastery of pupil engagement. This leads to hypothesis 2: *Discipline problems during teaching practice are negatively related to self-efficacy in pupil engagement.*

Practice school supervisors should support and give feedback to prospective teachers during their internships. Those entering teacher training without prior experience can easily stumble when too many tasks arise at once. Consequently, prospective teachers' field experiences often induce feelings of stress, weariness and vulnerability (Caires et al., 2012). Supervisors might share advice on how to tackle and manage these demanding situations. We, therefore, presume hypothesis 3: *Supervisors' personalised formative feedback during supervision is positively related to prospective teachers' self-efficacy in classroom management.* A corollary is hypothesis 4: *Supervisors' personalised formative feedback during supervision is positively related to prospective teachers' self-efficacy in pupil engagement.*

Prospective teachers are prepared on campus for field experiences during several school practice periods spread over four years. The overall aim of the Danish teacher education programme is to 'provide the pupils with knowledge and skills necessary to function as academically, didactically and pedagogically competent teachers in the Danish school system' (UFM, 2015). The campus experiences and courses on subject didactics and education theory (*lærerens grundfaglighed*) are intended to prepare prospective teachers for their internships, as well as their later teaching jobs as newly qualified teachers. The study texts read on campus and the campus lectures and seminars in subject didactics and education theory often

balance normative and descriptive theories on education and teaching, with a strong focus on helping prospective pupils independently form their own views on teaching and learning based on both theoretical and practical knowledge. Doing so can be difficult for prospective teachers, especially if they are seeking concrete answers to their challenges in planning and executing their teaching. A critical question is how relevant to their teaching practice during internships, prospective teachers perceive campus subjects education theory and subject didactics to be. *We presume that perceptions of the education theory course as relevant are positively related to prospective teachers' self-efficacy in respectively classroom management (hypothesis 5) and in pupil engagement (hypothesis 6).* Corollaries of these hypotheses are similar expectations for the subject didactics course. *We presume that perceptions of the subject didactics course as relevant are positively related to prospective teachers' self-efficacy in respectively classroom management (hypothesis 7) and in pupil engagement (hypothesis 8).*

3. Methodology

A survey was conducted with Danish prospective teachers at four campuses of one university during 2017. Based on instruments of measurement published in the literature as well as new techniques, a questionnaire was constructed (Haladyna & Rodriguez, 2013). It was developed in Norwegian and translated into Danish. The four campuses differ in size and organisation of the lectures. Prospective teachers were asked to voluntarily fill out a paper-based questionnaire after completing at least one practice period. No student refused to participate in the investigation. However, we cannot be sure that some prospective teachers might not deliver the paper-based questionnaire in their mandatory seminars. A total of 1509 completed questionnaires were returned. We

have analysed 1438 completed questionnaires (which means that 4.9% of the questionnaires were deleted because of lack of information). The respondents were asked to recall to what extent they had perceived their on-campus studies as relevant during the practice period and what experiences they had with their practice supervisors.

We designed a multi-item survey by developing our own constructs and items and adapting existing measurement instruments to our research purposes. The internal consistency (Cronbach's alpha) for each of the concepts was satisfactory. In the questionnaire, the prospective teachers responded to items on a seven-point Likert scale (1= totally disagree and 7= totally agree); "four" represented a neutral midpoint (neither agree nor disagree). By utilising two to four single items, the concepts were measured. An overview of the constructs, abbreviations and items for the four independent and two dependent variables are given in Table 1a. Table 1b presents descriptive statistics for single items and alpha values for the latent variables.

Table 1a. Overview of the constructs, abbreviations, items, four independent and two dependent variables

<p>Independent variables:</p> <p><i>Perceived discipline problems during teaching practice (pb)</i> In the final period of practice, you taught one or more classes. How often did the following events occur during your classes?</p> <ul style="list-style-type: none"> • Pupils disturbing fellow pupils' work (w83) • Pupils breaking class rules (w86) • Pupils making unnecessary noise (w88) • Pupils leaving their desks without asking permission (w90) <p><i>Perceived relevance to education theory teaching (pp)</i> In education theory teaching:</p> <ul style="list-style-type: none"> • I am given practical examples from actual teaching (w35). • The connection between pedagogic theory and practice is made clear (w38). <p><i>Perceived relevance to subject-didactics teaching (sp)</i> In subject-didactics teaching:</p> <ul style="list-style-type: none"> • I have become familiar with academic content relevant to the work of a teacher (w40). • The connection between subject-didactics theory and practice is made clear (w42). <p><i>Personalised formative feedback during supervision (ss)</i></p> <ul style="list-style-type: none"> • Supervision meetings at the practice school help me understand what I should do to improve as a teacher (w51). • Supervisors at the practice school give me clear, direct feedback about where I stand (w53). • Feedback from supervisors at the practice school closely aligns with what I have achieved (w54). • Feedback from supervisors at the practice school makes clear what is expected of me as a prospective teacher (w55). <p>Dependent variables:</p> <p><i>Self-efficacy in pupil engagement (en)</i> To what extent will you as a future teacher manage to:</p> <ul style="list-style-type: none"> • motivate pupils who show little interest in schoolwork? (w6) • make pupils believe they can do well in school? (w7) • inspire pupils to value learning? (w8) <p><i>Self-efficacy in classroom management (cm)</i> To what extent will you as a future teacher manage to:</p> <ul style="list-style-type: none"> • handle the most troublesome pupils? (w10) • get the pupils to follow school rules? (w11) • calm down noisy pupils? (w12)

Table 1b: Descriptive statistics for single items, and alpha values for latent variables, N = 1438 Perceived discipline problems during teaching practice (pb), perceived relevance to education theory teaching (pp), perceived relevance to subject-didactics teaching (sp), personalise formative feedback during supervision (ss), self-efficacy in pupil engagement (en) and self-efficacy in classroom management (cm).

Latent variable	Item	Denmark						Alpha
		Min	Max	Mean	SD	Skew	Kurt	
En	w6	2	7	5.27	0.99	-0.21	-0.08	.80
	w7	2	7	5.85	0.87	-0.53	0.28	
	w8	2	7	5.32	0.96	-0.13	-0.15	
Cm	w10	1	7	4.70	1.38	-0.26	-0.40	.66
	w11	1	7	5.18	1.05	-0.34	0.16	
	w12	2	7	5.86	0.95	-0.65	0.19	
Pp	w35	1	7	4.48	1.38	-0.23	-0.40	.75
	w38	1	7	4.44	1.28	-0.26	-0.06	
Sp	w40	1	7	5.29	1.21	-0.63	0.24	.78
	w42	1	7	4.66	1.30	-0.38	-0.14	
Ss	w51	1	7	4.88	1.57	-0.57	-0.41	.82
	w53	1	7	4.44	1.72	-0.28	-0.90	
	w54	1	7	5.18	1.46	-0.84	0.24	
	w55	1	7	4.66	1.54	-0.49	-0.48	
Pb	w83	1	7	4.59	1.44	-0.20	-0.68	.84
	w86	1	7	3.50	1.59	0.42	-0.69	
	w88	1	7	4.45	1.52	-0.10	-0.83	
	w90	1	7	3.66	1.60	0.24	-0.81	

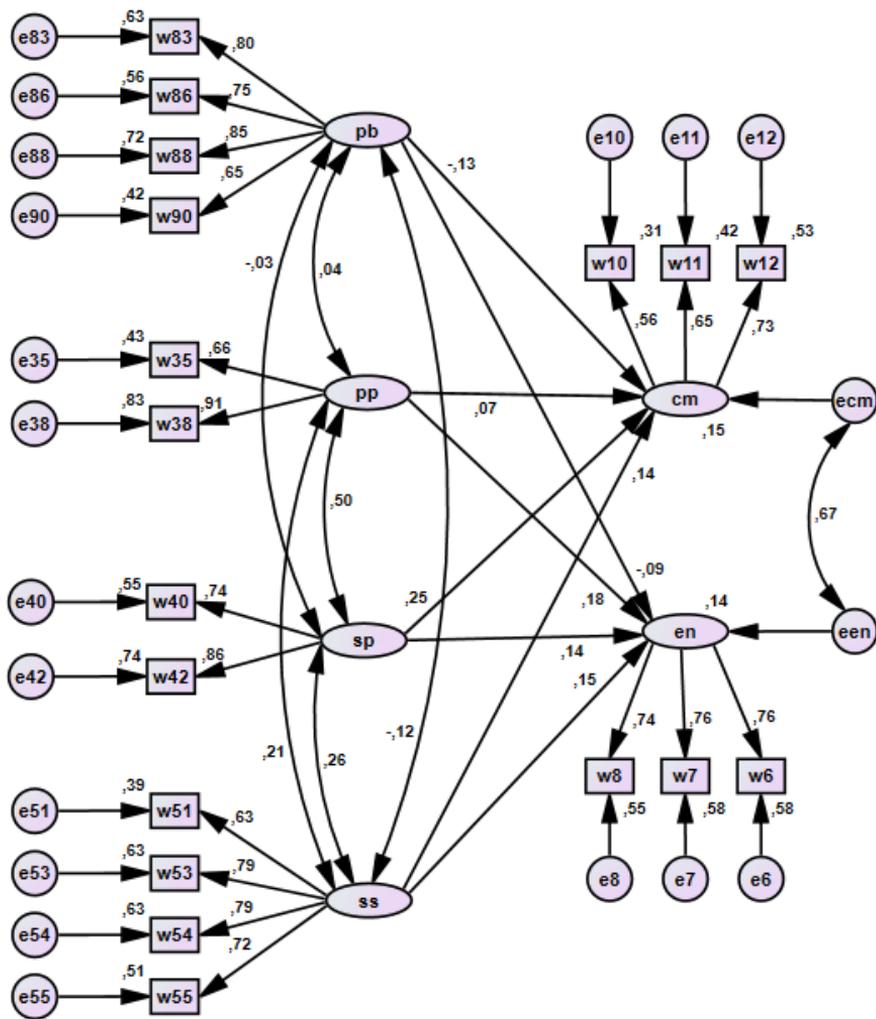
Structural equation modelling was used as the analytical method and was suitable for confirmatory factor analysis and path analysis. Assessments of appropriateness were based on the p-value of the χ^2 -value, root mean square error of approximation (RMSEA), Tucker-Lewis index (TLI), goodness-of-fit index (GFI) and comparative fit index (CFI). The following criteria indicated an acceptable match: $p > 0.05$; TLI, GFI and CFI > 0.95 ; and RMSEA < 0.05 . An acceptable match between model and data was indicated by the following criteria:

$p > 0.05$; TLI, GFI and CFI > 0.90 , and RMSEA < 0.08 (Blunch, 2008; Hu & Bentler, 1999; Kline, 2005). IBM SPSS 26 and AMOS 19 were used to estimate the measurement and structural models. The following values also indicated that the structural model had an acceptable match to the data: RMSEA = 0.036, $p < 0.05$, TLI = 0.968, GFI = 0.973 and CFI = 0.976.

4. Results

Figure 1 presents the estimated structural equation model. The results associated with the eight hypotheses posed in the theoretical framework section are summarised in Table 2.

The results show that all the hypothesis posed are supported, except for hypotheses 5. The results also show that discipline problems during teaching practice are negatively related to self-efficacy in classroom management. Discipline problems during teaching practice are also negatively related to self-efficacy in pupil engagement. Supervisors' personalised formative feedback is positively related to prospective teachers' self-efficacy in classroom management, and also positively related to prospective teachers' self-efficacy in pupil engagement. Perceptions of the education theory course as relevant are positively related to prospective teachers' self-efficacy in pupil engagement. Furthermore, the perceptions of the subject didactics course as relevant are positively related to prospective teachers' self-efficacy in both classroom management and pupil engagement.



Standardized estimates
 Kji-kvdrat = 348,063 df = 120 p-kji = ,000
 rmsea = ,036 tli = ,968 gfi = ,973 cfi = ,975

Figure 1. Structural equation model: perceived discipline problems during teaching practice (pb), perceived relevance to education theory teaching (pp), perceived relevance to subject-didactics teaching (sp), personalised formative feedback during supervision (ss), self-efficacy in pupil engagement (en) and self-efficacy in classroom management (cm).

Table 2: Hypothesis testing: Hypothesis (H_A), unstandardized estimate, standard Error (S.E.), p-value (p), perceived discipline problems during teaching practice (pb), perceived relevance to education theory teaching (pp), perceived relevance to subject-didactics teaching (sp), personalised formative feedback during supervision (ss), self-efficacy in pupil engagement (en) and self-efficacy in classroom management (cm).

H_A			Estimate	S.E.	p	H_A	
1	pb	--->	cm	-.078	.020	< .001	Supported
2	pb	--->	en	-.062	.020	.002	Supported
3	ss	--->	cm	.100	.025	< .001	Supported
4	ss	--->	en	.115	.025	< .001	Supported
5	pp	--->	cm	.051	.031	.098	Not Supported
6	pp	--->	en	.151	.032	< .001	Supported
7	sp	--->	cm	.193	.033	< .001	Supported
8	sp	--->	en	.122	.033	< .001	Supported

5. Discussion

The purpose of this study was to explore the associations of Danish prospective teachers' instructional self-efficacy with their campus and field experiences. If the strengths of the path coefficients reflect causal processes, we can say that some aspects of teacher education arrangements seem to nurture instructional self-efficacy more than others. One surprising result was that the perceived relevance of the subject education theory was significantly related to classroom management. One of the aims of education theory is to prepare prospective teachers to manage classrooms. However, the means of the items subsumed to education theory were high compared to similar measurements in the other Nordic countries (Authors, 2020). So this result might not be considered as unsatisfactory. There is a greater need for teacher education to equip prospective teachers with very clear tools to create authority in their tasks and professional selves. The leaders of Danish teacher education programmes have acknowledged

the problem of unruly pupils during prospective teachers' internships. However, some teacher educators have complained that prospective teachers tend to be technical and method oriented and hesitate to apply some aspects of the education theory content. According to a new plan for teacher education, teacher education pupils today should be educated to manage and radiate strong professional authority towards pupils and parents to a greater extent. University colleges have issued a plan with ten concrete proposals to improve teacher education. Central to the proposals are the teacher education and the teacher role. According to the proposal, the university colleges have committed themselves to 'focusing more on the development of the prospective teachers as professional teachers working with a strong professional authority in primary and lower secondary schools.

The perceived relevance of education theory was – as expected - positively related to self-efficacy in pupil engagement. One interpretation is that education theory nurtures prospective teachers' ability of engaging pupils' learning activities, at least how they themselves perceive this ability.

The perceived relevance of subject didactics was positively related to self-efficacy in both classroom management and pupil engagement. These results are not surprising as subject didactics might be perceived as more specific to and useful for the planning and execution of prospective teachers' school lessons. Rasmussen and Bayer (2015) claimed that 'combining theory and practice in this way within the teacher education programme provides a more solid foundation for the pupils' activities during their practical training' (p. 816). Prospective teachers can more easily grow into their role as leaders of learning processes if they have a reasonable balance between challenges and opportunities, and subject didactics seems to contribute to fostering mastery of self-efficacy in both classroom management and pupil engagement.

The results of the structural equation modelling showed that discipline problems were – as expected - negatively related to self-efficacy in classroom management. Discipline problems are an ever-present issue in Danish schools and offer considerable challenges to classroom management, although surveys have indicated that their extent has decreased somewhat recently. An implication for internship practice is that practice in too-demanding school classes might be unfruitful for the development of prospective teachers' self-efficacy in classroom management. If their self-efficacy becomes too low after their first experiences as classroom teachers, they might drop out of teacher education. However, reducing encounters with realistic challenges during training can be regarded as preparing prospective teachers for a deceptively easy teaching environment. One view is that “Greater efficacy leads to greater effort and persistence, which leads to better performance, which in turn leads to greater efficacy” (Tschannen-Moran, Woolfolk Hoy, and Hoy (1998), p. 234). However, the means of the self-efficacy items used in this study are very high and much higher than the neutral midpoint. One plausible inference is that prospective teachers' “confidence in their current efficacy often does more harm than good, especially in the context of teacher education” (Whiteley, 2005). If that is the case, due to such presumptuousness, teachers are left exposed to the negative impact of reality shock (e.g., see Roberts & Moreno, 2003), and to problems of serious concern arising from the pressures of full-time teaching, emphasising teacher efficacy confidence may result in undesirable expectations when pupils show high confidence in their abilities but view ability as a matter of possession (i.e., an entity view of ability, Dweck, 2000), or are more concerned with proving their abilities to others (i.e., performance goals), they often chicken out speedily after defeats. Wheatley (2002b) claims that this pattern may be encouraged in prospective teachers unknowingly by numerous teacher education programmes. If so, this fact may

help explain high teacher attrition in Denmark. Exhibition of overconfidence (i.e., great strength of efficacy beliefs) by prospective teachers could either be helpful or it could indicate a teacher who simply is not learning from his or her failures. Hoy and Spero (2005) observed that within the internships, instructional self-efficacy increased due to teaching experiences, but during the first year of teaching, this significantly decreased. The level of support received has been associated with efficacy changes during the first year of teaching. The development of teacher efficacy has been suggested by Woolfolk Hoy and Burke-Spero (2005) to be influenced by mastery experiences during internships and the first years of teaching. Teachers are given chances to assess their abilities during field experiences. Observations of other teachers might serve as "vicarious experience," which is another effective tool for promoting a sense of efficacy. In addition, Bandura (1997) pointed out the importance of feedback and support from the environment in the cultivation of efficacy. Mulholland and Wallace (2001), in a longitudinal case study, found that the information needed to build a teacher's efficacy comes mainly from successful mastery experiences and verbal persuasions. During both the preservice and inservice teaching years, previous experiences with an instructional activity, knowing pupils' characteristics, preference for manageable activities, and support from supervisors in early years of teaching helped teachers experience mastery.

Supervisors' personalised formative feedback was also positively related to instructional self-efficacy. This promising result shows that supervisors are able to provide personalised formative feedback during supervision that supports prospective teachers' feelings of mastery and limits their perceptions of shortcomings. Prospective teachers usually appreciate feedback if it is constructive. Providing personalised formative feedback during supervision might assist prospective teachers' learning (Cochran-Smith & Zeichner, 2009),

inform them of what is assessed in the summative evaluation, and give them opportunities to develop skills and knowledge in required areas (Buck et al., 2010). Providing personalised formative feedback during supervision can help prospective teachers cope with such challenges (Ferguson, 2011).

As with similar studies, this research confronted certain limitations from a methodological stance (for instance, a cross-sectional approach) as well as a conceptual perspective (for instance, parsimonious modelling). We acknowledge these limitations and argue that they contribute to a foundation for future studies. It should be emphasised that relatively little quantitative research has been conducted in relation to prospective teachers' prospective commitments and turnover intentions; therefore, we do not have a solid foundation of empirical research. The use of self-reported questionnaire data constituted another limitation. The subjective part of such data is indisputable. Compelling data regarding an employee's performance can be obtained via independent judgements, but this is difficult to achieve while honouring promises of anonymity. We did not have an opportunity to couple prospective teachers' self-reporting with objective performance-related goals. However, no relationships were found by Emmer and Hickman (1991) between the self-efficacy scores of prospective teachers and teaching performance ratings carried out by university supervisors. Further, prospective teachers who had troubles with managing the pupils reported although high levels of classroom management efficacy. If they overrate their abilities, they do not improve as if they take their challenges seriously. This is surely an avenue for further research. Usually, scholars believe that teachers with a high sense of efficacy are more persistent and work even harder than teachers with a low sense of efficacy (Woolfolk Hoy, Hoy & Davies, 2009). Pupils are motivated to learn more when they are taught by teachers with a high sense of efficacy. However, there can also be dangers in high instructional

efficacy. Wheatley (2002) raise questions about the suggestion of many scholars that teacher education programs should focus on developing teacher efficacy. The foregoing points challenge existing and planned practices in teacher education. We could discern prospective teachers from teachers. As reported by Aydin and Woolfolk Hoy, (2005), prospective teachers with high self-efficacy are likely to have less teaching experience; however, they tend to have a more positive supervisor-teacher relationship and teaching support. The concept of “teacher efficacy doubts” used by Wheatley (2002), is used here to encompass everything from mild uncertainty to profound doubts about one’s efficacy, including doubts about specific or general aspects of one’s teaching, and doubts regarding outcome expectancies, efficacy expectancies, and personal teaching efficacy: “If positive teacher efficacy can be problematic (Wheatley, 2000), and teachers’ efficacy doubts can be beneficial, it is not clear what kinds of teacher efficacy beliefs teacher educators should aim to develop.” If so, we need to prepare prospective teachers to be more aware of the uncertainties of teaching: “Much of what we tell and show students should be punctuated with tentativeness, caveats, and clear invitations to challenge the theories and assumptions of teacher educators” (Winograd (1998) p. 304). Such an approach may help prospective teachers become more comfortable with efficacy doubts. This in turn may allow them to use those doubts as a mental tool to help them improve their actual teaching effectiveness.

6. Conclusion

The purpose of this study was to explore the associations of Danish prospective teachers’ instructional self-efficacy with their on-campus and field experiences. We found that discipline problems were negatively related to self-efficacy in classroom management, while the perceived relevance of subject didactics was

positively related to instructional self-efficacy. Supervisors' personalised formative feedback was also positively related to instructional self-efficacy. The perceived relevance of the subject education theory was positively related to self-efficacy in pupil engagement but not classroom management. If these associations reflect causal processes, the results indicate that the education theory course might be improved to better prepare prospective teachers for classroom management. Further, prospective teachers should not have their internships in school classes with too much discipline problems.

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