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Factors Influencing the Self-Efficacy of Teacher Training Students with Practical Experience

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Article Info

Abstract

This study investigates the impact of practical experiences on self-efficacy among prospective teachers in Schleswig-Holstein, Germany. We used an online survey of 481 pre-service teachers to analyze the relationships between university training, practical school experiences, and beliefs about self-efficacy in classroom management and cognitive activation. Structural equation modelling revealed that discipline-related challenges negatively affected self-efficacy in classroom management, while the perceived relevance of subject didactics was positively associated with self-efficacy in both classroom management and the cognitive activation of students. Furthermore, personalized formative feedback from supervisors emerged as a significant positive factor for enhancing self-efficacy in classroom settings. The findings underscore the importance of integrating effective feedback mechanisms and strengthening the connection between theory and practice in teacher education programs. By highlighting these dimensions, our study provides actionable insights for refining teacher training curricula to better support the development of self-efficacy among future educators, ultimately fostering engagement and effectiveness in the educational environments of today and tomorrow.

Introduction

As teacher shortages worsen, with alarming rates of attrition and growing demands placed on educators, numerous institutions and research organizations are examining how to effectively structure teachers' ongoing professional development by equipping teachers to better tackle these challenges. A key factor in such discussions is teachers' self-efficacy, which refers to their confidence in their ability to effectively carry out teaching-related tasks, such as engaging uninterested students and managing disruptive behavior. In recent years, a variety of learning opportunities have emerged aimed at enhancing teachers' self-efficacy. These include targeted intervention programs in pre-service teacher education and broader strategies that emphasize core teaching practices and opportunities for practical application at the center of teacher training (Grossman et al., 2009). Although these two approaches may initially appear quite different, they are actually connected; both provide pre-service teachers with a specific blend of experiential learning.

Further, teacher effectiveness is a central issue in an era dominated by concepts such as "21st-century skills," which not only require the acquisition of a wide range of knowledge but also require teachers and learners to demonstrate their skills in what are known as "soft skills." Teamwork, creativity, communication skills, critical thinking, and problem-solving ability are just a few examples that are intended to facilitate a clear path to the society of the 21st century (Fadel, 2008; González-Pérez & Ramírez-Montoya, 2022; Organisation for Economic Co-operation and Development, 2019).

Albert Bandura's (1997) socio-cognitive theory offers a useful framework to understand these diverse phenomena. He identifies four key sources that shape self-efficacy beliefs: mastery of experiences, vicarious experiences, social or verbal persuasion, and physical and emotional states. Among these, mastery experiences are regarded as having the most significant impact on people's self-efficacy beliefs. Teacher effectiveness is a building block that can lead to mastery experiences and is fueled by, among other things, self-efficacy beliefs: that is, beliefs that setting impulses can and will achieve the desired results. These self-efficacy beliefs, in turn, influence teachers' willingness to display effort, perseverance, and resilience in class (Tschannen-Moran et al., 1998). High self-efficacy beliefs are also considered factors that benefit overall health and protect against burnout tendencies (Dicke et al., 2014; Dückers-Klichowski, 2005; Fives et al., 2007; Schaarschmidt & Kischke, 2013; Schmitz & Schwarzer, 2002; Schwerdtfeger et al., 2008). Based on their literature review, Schwarzer and Warner (2014) report that teachers with high self-efficacy beliefs demonstrate more positive social behavior towards their students and can thus positively influence their students' performance. Teacher training students in particular are said to have higher self-efficacy beliefs than others and are therefore confident in their ability to reach and influence their students, regardless of their effort level and individual social and performance behavior (Pendergast et al., 2011; Skaalvik & Skaalvik, 2010).

In the initial phases of pre-service teacher education, efficacy beliefs are often viewed as malleable, and teachers' long-term development depends heavily on their initial practical experiences in training contexts (Hoy & Burke-Spero, 2005a). High self-efficacy beliefs in teaching can help pre-service teachers continually improve their teaching skills. Hoy and Burke-Spero (2005b) found that adequate experiences in teacher education tend to

increase pre-service teachers' sense of self-efficacy and their teaching effectiveness and that this effectiveness is further enhanced by students' actual achievement-related success. Ma et al. (2025) report that the mastery experience gained during professional placements has the most influence on changes in student teachers' self-efficacy across different phases of field experiences. This finding demonstrates the crucial nature of placements in self-efficacy development and the predominant role of enactive experience in influencing self-efficacy.

This study aims to investigate the intricate relationships between the practical experiences of prospective teachers, their self-efficacy in teaching, and the educational offerings provided by universities in Germany, specifically in Schleswig-Holstein. By focusing on both primary and secondary school teachers in this region, the research seeks to establish a coherent link between the educational experiences students receive on campus and their practical phases in schools.

An essential aspect of this inquiry is the emphasis on student engagement in teacher education. Effective learning environments are cultivated when students actively participate in their educational journey, both academically and in their teaching practice. The study examines how university teaching influences self-efficacy related to classroom management and cognitive activation, highlighting the necessity for students to actively engage with the content and methodologies they will eventually utilize in their careers.

Theoretical Framework

The concept of self-efficacy was introduced by Bandura (1997) to describe a person's ability to achieve a desired level of performance. Self-efficacy theory focuses on individuals' assessments of their own abilities and competencies and examines how these appraisals influence behavior and experiences. In this context, Bandura assumes that self-efficacy expectations have a decisive influence on a person's behavior. These specifically describe people's beliefs regarding the extent to which they can achieve certain self-imposed or externally established goals through their own efforts. Both personal abilities and experiences, along with situational conditions, play a role. In summary, high self-efficacy expectations lead to a person being more willing to accept challenges and be persistent in difficult situations, while low self-efficacy expectations tend to lead to a person avoiding challenges or even giving up entirely (Bandura, 1997, 2000; Bandura & Hall, 2018).

Bandura describes various factors that influence self-efficacy. First, one's own experiences play a role; a person who has had positive experiences with a particular task will have higher self-efficacy expectations than if those experiences were negative. Second, feedback from others is important: if they provide positive feedback or offer support, individual self-efficacy expectations can increase (Bandura, 1997; Bandura & Locke, 2003). Krofta and Nordmeier (2014) found that practical seminars lead to high self-efficacy beliefs, especially if those sessions are well supervised and the student teachers receive constructive feedback on their performance. Structured mentoring, especially in the initial phase of studies, can also lead to higher self-efficacy expectations and lower psychological stress (Öhlschlegel-Haubrock et al., 2014). Observing others successfully complete a particular task can also increase expected self-efficacy.

Self-efficacy theory has been examined in numerous studies that report various empirical findings. Among other things, researchers have confirmed the basic hypothesis that people with higher self-efficacy beliefs are more willing to take on challenging tasks and persevere longer, even if they fail, than people with lower such beliefs (Schmitz & Schwarzer, 2000; Schulte et al., 2008). Furthermore, scholars have demonstrated that high self-efficacy plays an important role in combating the development and persistence of mental disorders. For example, high self-efficacy can reduce the likelihood of addiction and increase periods of abstinence (Chan, 2002; Chang, 2009; Ruholl & Schneider, 2007; Zingg & Soyka, 2009).

In summary, the concept of self-efficacy describes people's confidence in their own abilities, which enables them to act successfully and purposefully in a given situation. Accordingly, Bandura suggests that the motivational force to act, the effort required for an undertaking, and the ability to overcome setbacks or obstacles are all driven by the powerful mechanism of belief in one's own abilities. This confidence develops over time and can be moderated by (learning) environments (Bandura, 1997). In the teaching field, teacher education programs and practical seminars are the environments in which prospective teachers can develop their teaching skills, and practical seminars should provide environments in which they can improve those skills.

Self-efficacy among prospective teachers is an important factor for later success in the classroom because teachers must be able to handle difficult tasks and deal successfully with challenges. High self-efficacy can help student teachers successfully overcome these challenges and establish themselves as successful teachers who can motivate and support students (Rothland, 2018).Research findings suggest that self-efficacy in teaching differs between established and prospective teachers (Klassen & Chiu, 2010). Teacher trainees with high self-efficacy are also considered potentially more effective teachers than those with low self-efficacy (Bates et al., 2011; Leader-Janssen & Rankin-Erickson, 2013).

Numerous studies (Dicke et al., 2014; Emmer & Hickman, 1991) have shown that self-efficacy beliefs influence teachers' classroom management. High self-efficacy leads to teachers being able to motivate and control their students more effectively because they are convinced that they are capable of handling difficult classroom situations. Conversely, low self-efficacy is associated with poorer classroom management, with teachers less confident in their ability to guide and control students. Emotions are also relevant in this context. For example, Bach and Hagenauer (2021) have shown that negative emotional states have a deleterious effect on classroom management, which is associated with assessments related to students' ability to deal with classroom disruptions (Lee & van Vlack, 2018; McCarthy et al., 2015).

Teacher Training in Schleswig-Holstein

In Germany, teacher training is regulated by the laws of the country's 16 states (Länder). The state ministries of education and science regulate training through study, training, and examination regulations or legal requirements. The Schleswig-Holstein Teacher Training Act (Lehrkräftebildungsgesetz Schleswig-Holstein, 2014) is relevant to this study. For example, it stipulates that the path to becoming a teacher involves three interrelated phases: teacher training at a university, preparatory service, and continuing education. For the present study, the second

phase of preparatory service, which is regulated in Section 3, is of particular interest. According to Section 3.21, the goal of the preparatory service is to "expand and deepen the acquired subject-specific, didactic, and pedagogical knowledge, experience, and skills in close connection with the teaching provided." This preparatory service lasts 18 months (Section 3.23). The training in this phase has two parts and includes courses on topics such as dealing with heterogeneity and inclusion, the basics of diagnostic support, consistent language education, and media literacy (Section 3.25). The school, meanwhile, "has the task of instructing, advising, and supporting teachers in their schoolwork, taking into account the training standards," which is done with reference to "observation and supervised teaching, as well as independent teaching and the performance of other school-related tasks" (Section 3.26).

Theoretical Derivation of the Hypotheses

As the above summary shows, the second phase of teacher education involves practical testing of prospective teachers' skills and is where they can help determine whether and how their future careers will develop. The literature has recognized self-efficacy in student engagement in the classroom (Skaalvik & Skaalvik, 2010). Pre-service teachers have difficulty dealing with situations that require both academic knowledge and behavioral correction (Butler & Monda-Amaya, 2016). Strong self-efficacy in classroom management is important because students are not always willing to put in the necessary effort, eagerness to learn, and attentiveness, which can lead to noisy and chaotic classrooms. However, prospective teachers are generally in a weak position because their role is temporary and because they do not assign grades. If the challenges they face are too great, they can impair prospective teachers' self-efficacy in classroom management. This leads to Hypothesis 1: Perceived discipline problems during classroom practice have a negative impact on self-efficacy in classroom management.

Discipline problems place significant demands on prospective teachers' self-confidence (Björnsdóttir et al., 2022). The primary school curriculum assigns a high value to students' cognitive activities during class. Therefore, student teachers must work hard to engage students in such activities through projects, group work, and laboratory activities. However, discipline problems during class can pose challenges to cognitive activation for prospective teachers, leading to Hypothesis 2: Perceived discipline problems during classroom practice negatively impair self-efficacy in students' cognitive activation in the classroom.

Supervisors play a crucial role in supporting and providing constructive feedback to student teachers during their placements. The journey of managing multiple tasks in teaching can be overwhelming, often resulting in stress, fatigue, and even burnout (Grant-Smith & Gillett-Swan, 2017). To effectively navigate these challenges, it is vital that supervisors not only offer guidance but also actively engage student teachers in the learning process.

Student engagement in teacher education can significantly enhance the effectiveness of supervisory feedback. When students are encouraged to take an active role in their development, they become more receptive to feedback and better equipped to implement it in their practice. Therefore, we propose the following hypotheses:
- Hypothesis 3: Personalized formative feedback during supervision is positively related to prospective teachers' self-efficacy in classroom management.

- Hypothesis 4: Personalized formative feedback during supervision is positively related to prospective teachers' self-efficacy in effectively cognitively activating students.

By fostering an environment where student teachers are encouraged to engage fully with their experiences, supervisors can help cultivate their confidence and skills, leading to a more enriching and productive teacher education journey. Engaged students are more likely to develop resilience and adaptability, essential traits for successful educators, ultimately leading to a positive impact on their future students.

Prospective teachers are prepared for teaching through practical seminars. The ultimate goal of teacher education programs is to provide students with the knowledge and skills they need to perform competently in the school system. Practical experiences on the university campus and courses in subject matter didactics and educational theory are intended to prepare prospective teachers for their internships and for subsequent assignments as newly qualified teachers. The on-campus course texts and lectures in subject didactics and educational theory often reconcile normative and descriptive theories of education and teaching, with a focus on helping pre-service teachers develop their own views on teaching and learning, based on theoretical and practical foundations. This can be difficult for pre-service teachers, especially when they seek concrete resolutions to the challenges they face in planning and delivering their lessons. A critical question is the degree to which pre-service teachers perceive educational theory and subject didactics as relevant to their teaching practice during the internship. We thus propose the following: A favorable perception of the relevance of pedagogical theory classes is positively related to pre-service teachers' self-efficacy in classroom management (Hypothesis 5) and their self-efficacy in cognitively activating students (Hypothesis 6). We have similar expectations regarding subject didactics courses: A favorable perceived relevance of subject-specific didactic teaching among prospective teachers is positively related to higher self-efficacy in classroom management (Hypothesis 7) and self-efficacy in cognitively activating students (Hypothesis 8).

Methodology

A survey was conducted among prospective teachers at Christian-Albrechts-Universität zu Kiel (CAU Kiel) and Europa-Universität Flensburg (EUF), two universities in Schleswig-Holstein, Germany. Brouër et al. (2018) describe the organizational conditions for cooperation between the various teacher training institutions in that state as favourable in that, compared to other states, only a few institutions are involved. Based on measurement instruments published in the literature, a questionnaire was developed in Norwegian and translated into German (Haladyna & Rodriguez, 2013). Student teachers were asked to voluntarily complete a paper questionnaire after completing at least one training period. The questionnaires were distributed by course instructors. A total of 474 complete questionnaires were returned and analyzed. Respondents were asked to recall the extent to which they considered their practical seminars and theory and subject didactics courses to be relevant and the experiences they had with their supervisors. Prospective teachers answered questions on a seven-point Likert scale (1 = strongly disagree; 7 = strongly agree; 4 = neither agree nor disagree [i.e., neutral]). The concepts were measured using two to four individual items. An overview of the constructs, abbreviations, and items for the four independent and two dependent variables is provided in Table 1, as is the internal consistency (Cronbach's alpha)

for each concept, which was satisfactory in all cases.

Table 1. Cronbach's Alpha, Constructs, and Items, N = 474

Constructs	**Items**	**CA**
Self-efficacy in pupil engagement	**en**	.77
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	
Self-efficacy in classroom management (cm)	**cm**	
To what extent will you as a future teacher manage to:		
handle the most troublesome pupils?	w10	
get the pupils to follow school rules?	w11	.72
calm down noisy pupils?	w12	
Perceived relevance to education theory teaching	**pp**	.86
In education theory teaching:		
I am given practical examples from actual teaching	w35	
I get to know a subject content which is relevant for the work as a teacher	w36	
The connection between pedagogic theory and practice is made clear	w38	
Perceived relevance to subject-didactics teaching	**sp**	.87
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	
Personalized formative feedback during supervision	**ss**	.91
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	
Perceived discipline problems during teaching practice	**pb**	.85
In the final period of practice, you taught one or more classes. How often did the following events occur during your classes?		
Pupils disturbing fellow pupils' work	w83	
Pupils breaking class rules	w86	
Pupils making unnecessary noise	w88	
Pupils leaving their desks without asking permission	w90	

Structural equation modelling was used for data analysis. The dependent latent constructs are perceived self-efficacy in stimulating students' cognitive skills (en) and self-efficacy in classroom management (cm), while the

remaining latent constructs, perceived relevance of pedagogical theory instruction (pp), perceived relevance of subject-specific didactic instruction (sp), personalized formative feedback during supervision (ss), and perceived discipline problems during classroom practice (pb), were included as explanatory constructs. The assessment of model fit is based on the p-value of the χ^2 value, the root mean square error of approximation (RMSEA), the Tucker-Lewis Index (TLI), the goodness-of-fit index (GFI), and the comparative fit index (CFI). IBM SPSS 26 and AMOS 19 were used to estimate the measurement and structural equation models.

Results

Figure 1 shows the estimated structural equation model, and Table 2 shows the descriptive statistics for each item. The estimated model shows acceptable fit to the data; the thresholds for judging it as an acceptable model (Kline, 2023) are shown in parentheses: $\chi^2 = 262.86$ at $p = .000$ ($p < .05$), RMSEA = 0.044 (< 0.08), TLI = 0.965 (> 0.90), GFI = 0.948 (> 0.90), and CFI = 0.972 (> 0.90).

Table 2. Descriptive Statistics Per Item, N = 474

Item	Min	Max	Mean	SD	Skewness	Kurtosis
w6	1.00	7.00	5.33	1.19	-0.96	1.31
w7	1.00	7.00	5.84	0.95	-1.09	2.35
w8	1.00	7.00	5.63	1.03	-0.97	1.58
w10	1.00	7.00	5.12	1.47	-0.74	0.12
w11	1.00	7.00	5.10	1.26	-0.68	0.48
w12	1.00	7.00	5.52	1.16	-0.86	0.83
w35	1.00	7.00	3.15	1.50	0.32	-0.84
w36	1.00	7.00	3.56	1.65	0.11	-1.01
w38	1.00	7.00	3.31	1.58	0.25	-0.79
w40	1.00	7.00	4.81	1.64	-0.77	-0.08
w42	1.00	7.00	4.34	1.68	-0.51	-0.65
w51	1.00	7.00	5.30	1.70	-1.03	0.33
w53	1.00	7.00	5.22	1.73	-0.92	0.05
w54	1.00	7.00	5.12	1.54	-0.83	0.39
w55	1.00	7.00	5.24	1.59	-1.00	0.53
w83	1.00	7.00	3.82	1.71	0.23	-0.92
w86	1.00	7.00	2.86	1.64	0.73	-0.28
w88	1.00	7.00	3.66	1.74	0.23	-0.96
w90	1.00	7.00	2.74	1.80	0.81	-0.48

The results show that all hypotheses except Hypothesis 5 are supported. Perceived discipline problems during teaching practice are weak but negatively related to self-efficacy in classroom management. Discipline problems during teaching practice are negatively related to self-efficacy in cognitively activating students. Personalized

formative feedback during supervision is positively related to prospective teachers' self-efficacy in classroom management and positively related to self-efficacy in cognitively activating students. The perceived relevance of pedagogical theory lessons is positively related to self-efficacy in cognitively activating students, but there are no correlations with self-efficacy in classroom management. In addition, the perceived relevance of subject-specific didactic teaching is positively correlated with self-efficacy in both classroom management and students' cognitive activation. However, the correlation with cognitive activation is very weak.

Standardized estimates
Kji-kvdrat = 262,859   df = 137   p-kji = ,000
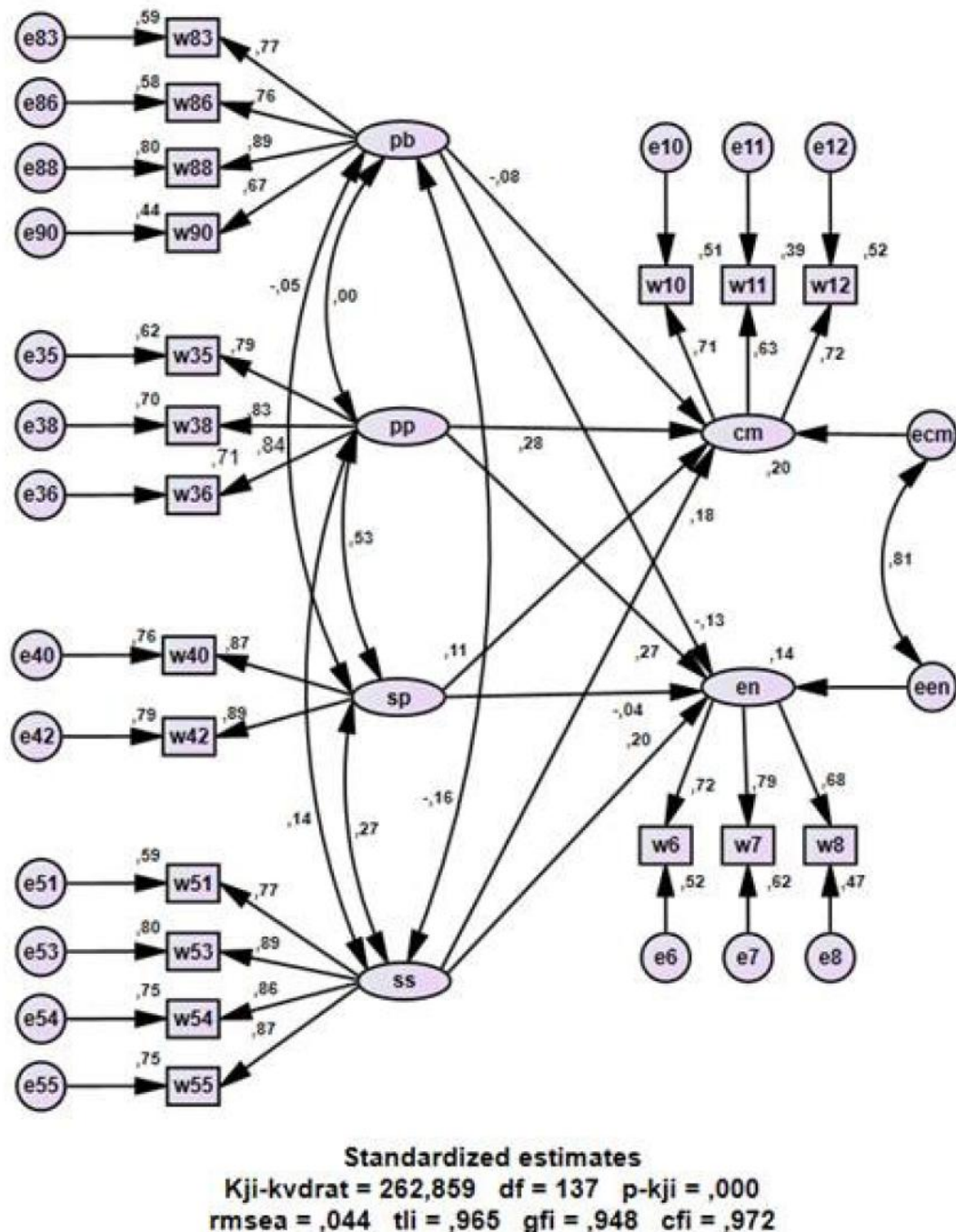rmsea = ,044   tli = ,965   gfi = ,948   cfi = ,972

Figure 1. Structural Equation Model. Perceived Discipline Problems during Teaching Practice (pb), Perceived Relevance of Pedagogical Theory Lessons (pp), Perceived Relevance of Subject-Specific Didactic Lessons (sp), Personalized Formative Feedback during Supervision (ss), Self-Efficacy in Cognitive Activation of Students (en), and Self-Efficacy in Classroom Management (cm).results

Discussion

The aim of this study was to investigate the relationship between prospective teachers' self-efficacy in classroom management and their experiences in schools during practical phases. The findings reveal that certain aspects of teacher education are more effective in fostering self-efficacy than others. Notably, the perceived relevance of pedagogical theory classes significantly impacts classroom management skills.

The primary objective of pedagogical theory classes is to prepare future teachers for effective classroom management. To achieve this goal, it is crucial for teacher education programs to emphasize student engagement, equipping prospective teachers with clear and practical tools to establish strong professional authority. Engaged learners are more likely to perceive the relevance and applicability of pedagogical theories to their future teaching practices. Indeed, our results indicate that the perceived relevance of these classes is positively associated with self-efficacy in cognitively activating students. This suggests that when students feel engaged and believe in the applicability of what they learn, they are better prepared to facilitate engaging learning activities, as they perceive and develop the necessary skills.

Furthermore, the perceived relevance of subject didactics instruction is positively related to self-efficacy in both classroom management and student cognitive activation. This correlation emphasizes the importance of practical relevance in teacher education. Subject didactics provides specific, actionable strategies that are directly applicable to planning and executing lessons, illustrating how engaged students gain clarity in their role as future educators. Rasmussen and Rash-Christensen (2015) argue that the integration of theory and practice within teacher education not only supports student engagement but also lays a strong foundation for their activities during practical training. When student teachers encounter an appropriate balance between challenges and opportunities, they are more likely to thrive in their roles as facilitators of learning.

The study's structural equation modeling results reveal that discipline problems are negatively associated with self-efficacy in classroom management. These challenges are common in school settings (Dicke et al., 2015) and can undermine a teacher's confidence. This underscores the importance of providing engaging and realistic experiences during practical seminars. Engaging students in environments where they can realistically tackle such challenges is crucial; otherwise, they may experience a decline in self-efficacy that could lead to high dropout rates if they feel overwhelmed and frustrated.

However, it is equally vital that student teachers still encounter realistic challenges during their internships. While reducing exposure to demanding classroom situations might seem beneficial, it risks preparing them inadequately for the realities of teaching. This paradox highlights that increased self-efficacy encourages persistence and effort, further enhancing performance (Tschannen-Moran et al., 1998). Interestingly, despite high self-efficacy measures observed in this study—significantly above neutral midpoints—there is a concern that overconfidence may lead to a reality shock once teachers fully enter the workforce (Roberts & Moreno, 2003), contributing to potential dropout due to negative experiences (Hong, 2010). Hoy and Burke-Spero (2005) stress that self-efficacy can fluctuate based on successful experiences during internships, reinforcing the need for student engagement as they

evaluate their abilities in real-world settings.

Moreover, personalized formative feedback from supervisors is critical for nurturing self-efficacy, a finding that resonates with Bandura's (1997) emphasis on the importance of feedback and environmental support. This study highlights that personalized feedback during supervision is positively related to self-efficacy during teaching experiences. Such engagement in the feedback process not only enhances self-efficacy but also supports pre-service teachers in recognizing how they are being assessed and developing the requisite skills and knowledge in their practice (Cochran-Smith & Zeichner, 2009).

To enhance self-efficacy among teachers, exploring effective interventions for pre-service teachers remains a key focus area. The research by Täschner et al. (2025) identified essential intervention components based on Bandura's four sources and discovered positive impacts on teacher self-efficacy across various career stages and contexts. Notably, effectiveness was greater in studies that provided detailed descriptions of their interventions and included reflective practices, reinforcing the notion that engaged, reflective learners are likely to see improved self-efficacy outcomes. Ultimately, Täschner et al. advocate for continued efforts within teacher education and training programs to foster the growth of self-efficacy through the promotion of student engagement. By prioritizing engaging educational experiences, we can better prepare prospective teachers, ensuring they enter the classroom not only with confidence but also with the practical skills necessary for effective teaching.

Limitations

Like similar studies, this research faced certain limitations from the methodological perspective (e.g., a cross-sectional approach) and the conceptual perspective (e.g., parsimonious modelling). We acknowledge these limitations and argue that they help offer an avenue for future studies. The use of self-reported questionnaire data was a limitation, as the subjectivity of such data is undeniable. More objective data on staff performance can be collected through independent judgments. However, this is difficult to achieve when anonymity is promised. Furthermore, there was no way to link pre-service teachers' self-reports to objective performance-related data. However, Emmer and Hickman (1991) found no relationship between pre-service teachers' self-efficacy beliefs and faculty ratings of their teaching performance. Furthermore, pre-service teachers who experienced difficulties in managing students reported high levels of effectiveness in classroom management. If student teachers overestimate their abilities, they may not improve or take challenges seriously. This is certainly an important – if not vital – avenue for further research. Ma al. (2022) found that student teachers' perceived self-efficacy in the domains of classroom management and student engagement decreased significantly between the first placement and before the last placement began. We wish to pursue this track to examine how that phenomenon plays out in German teacher education.

Implications for Practice and Research

A sufficient level of self-efficacy is essential for aspiring teachers to develop their pedagogical skills effectively. This study examines the statistical relationships between prospective teachers' experiences during university

training, their practical experiences in schools, and their self-efficacy beliefs in classroom settings. With a sample of 481 prospective teachers from Schleswig-Holstein surveyed through a structured online questionnaire, we employed structural equation modelling to explore these intricate relationships. The results indicate that discipline-related challenges negatively affect self-efficacy in classroom management. In contrast, there is a positive correlation between the perceived relevance of subject didactics and self-efficacy in both classroom management and student cognitive activation. Furthermore, personalized formative feedback from supervisors is positively linked to classroom self-efficacy, while the perceived importance of educational theory positively influences cognitive activation self-efficacy but does not extend to classroom management.

These findings carry significant implications for teacher training practices and future research endeavors. Firstly, it is critical for training programs to prioritize personalized formative feedback from supervisors during internships. Supervisors hold a vital role in guiding prospective teachers through their experiences, providing the necessary support for these future educators to build confidence in their teaching abilities. Engaging in structured mentoring that emphasizes constructive, individualized feedback can significantly enhance self-efficacy among teachers. Given that perceived discipline issues negatively impact self-efficacy in classroom management, it is imperative for teacher training programs to actively engage prospective teachers by equipping them with effective strategies, including workshops focused on behavior management, conflict resolution, and creating positive learning environments. These initiatives will empower them to face challenges with confidence.

Moreover, the positive correlation between the perceived relevance of pedagogical theories and cognitive activation highlights the need for closer integration of theoretical frameworks with practical applications in teacher training curricula. Ensuring that teacher education students engage with how educational theories translate into real-world teaching scenarios enhances their ability to actively and effectively engage students in the learning process.

Teacher education programs must continually evaluate and revise their curricula to better align with the self-efficacy needs of pre-service teachers. Instances where high perceived relevance in subject didactics are linked to improved self-efficacy suggest that courses should deliver clear, practical insights and strategies that future teachers can directly apply in classrooms, bridging the gap between academic coursework and the realities of school life.

It is also important to unpack the complexities of self-efficacy, particularly regarding the potential pitfalls of inflated confidence among prospective teachers. Teacher training initiatives should acknowledge the multifaceted nature of teaching and encourage thorough, frequent critical reflection on one's competencies. By providing pre-service teachers with tools to manage uncertainty and view challenges as opportunities for growth, we can enhance their long-term resilience and effectiveness. Continued exploration of the dynamics between practical experiences, the perceived relevance of educational content, and self-efficacy across various teaching contexts is vital. Future research should involve longitudinal studies to track changes in self-efficacy throughout the teacher education pathway, examining how different placements influence the ongoing development of student teachers.

Conclusion

This study aimed to investigate the relationships between pre-service teachers' self-efficacy and their experiences both on campus and in actual classrooms. Our findings revealed that discipline issues were negatively correlated with self-efficacy in classroom management, while the perceived relevance of subject didactics positively influenced teaching self-efficacy. Additionally, personalized formative feedback from supervisors was positively associated with self-efficacy in teaching. The perceived relevance of pedagogical theory instruction was linked positively to self-efficacy in cognitive activation but not to classroom management.

If these associations suggest causal processes, our results indicate a need for improvement in pedagogical theory instruction to better prepare pre-service teachers for effective classroom management. Furthermore, pre-service teachers should avoid completing their internships in classrooms plagued by discipline problems. While high self-efficacy can sometimes lead to challenges (Wheatley, 2000), cultivating a sense of doubt can also be beneficial. It is essential to prepare aspiring teachers to understand the uncertainties inherent in teaching, fostering an environment where they feel comfortable acknowledging their doubts. Such awareness can enable them to convert uncertainties into valuable insights that improve their actual teaching effectiveness.

Teacher training programs in Schleswig-Holstein and beyond must focus on these implications, adapt and refine their frameworks continually to cultivate competent, confident, and reflective teachers who are well-equipped to meet the demands of modern classrooms. Central to this mission is the active engagement of student teachers throughout their education, ensuring they are not only passive recipients of knowledge but dynamic participants in their professional development.

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