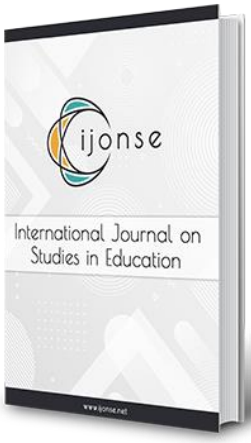

www.ijonse.net

Early Career Teachers' Professional Agency in the Classroom and Socio-contextual Burnout: A Cross-country Comparison

Roosa Yli-Pietilä
Tampere University, Finland

Kirsi Pyhältö
University of Helsinki, Finland

Janne Pietarinen
University of Eastern Finland, Finland

Auli Toom
University of Helsinki, Finland

Arniika Kuusisto
University of Helsinki, Finland

Tiina Soini
Tampere University, Finland

To cite this article:

Yli-Pietila, R., Pyhalto, K., Pietarinen, J., Toom, A., Kuusisto, A., & Soini, T. (2024). Early career teachers' professional agency in the classroom and socio-contextual burnout: A cross-country comparison. *International Journal on Studies in Education (IJonSE)*, *6*(3), 345-374. https://doi.org/10.46328/ijonse.210

International Journal on Studies in Education

2024, Vol. 6, No. 3, 345-374 https://doi.org/10.46328/ijonse.210

Early Career Teachers' Professional Agency in the Classroom and Socio-contextual Burnout: A Cross-country Comparison

Roosa Yli-Pietilä, Kirsi Pyhältö, Janne Pietarinen, Auli Toom, Arniika Kuusisto, Tiina Soini

Article Info

Article History

Received:
03 February 2024
Accepted:
20 May 2024

Keywords

Professional agency
Socio-contextual burnout
Early career teacher
Teacher learning
Cross-country comparison

Abstract

This study examines early career teachers' (ECT) professional agency in relation to socio-contextual burnout in four European countries: the UK, the Netherlands, Finland, and Sweden. Teachers' professional agency has been shown to be related to their work-related well-being. However, we know little about the societal, cultural and contextual conditions facilitating the sense of professional agency that ECTs have in terms of active and intentional learning in the classroom and how ECTs experience burnout across countries. The aim of this study was to find out if these experiences of agency and burnout vary between countries and if they are interrelated. A total of 3814 ECTs responded to the survey, and the data were analysed using structural equation modelling. We found that the scales of teachers' professional agency and socio-contextual burnout were invariant and related to each other across the countries. In particular, the aim of ECTs to build a collaborative environment and transform classroom practices with students were found to hold potential to tackle burnout in the four countries examined.

Introduction

The importance of early career teachers' (ECT) capacity to learn at work and transform their teaching practices has been found to be crucial for not just coping but thriving in the profession (Kutsyuruba et al., 2018, 2019; Pyhältö et al., 2020). Teachers need every day professional learning to both succeed and remain engaged in teaching career, and in avoiding negative feelings such as inadequacy in teacher-student interaction (Yli-Pietilä et al., 2023). Effective teacher learning includes for example being able to reflect and evaluate pedagogical decision-making in class and modifying teaching practices according to these reflections and feedback from students (Darling-Hammond, 2022). This kind of learning with students requires viewing teaching as a reciprocal learning process where collaborative learning environment with students is continuously constructed and learning is an integral part of teaching (Bramberger & Winter, 2021; Van Eekelen, Vermunt & Boshuizen, 2006; Toom et al., 2017).

Motivation to, self-efficacy beliefs and skills of learning about own teaching and transforming it, is referred here as sense of teachers' professional agency (TPA) (Pyhältö et al., 2012, 2014). Prior studies suggest that the sense of teachers' professional agency is associated with many positive effects such as student achievement, teacher engagement and involvement in school development work (Long et al., 2012; Romano, 2007; van den Borre et

al., 2021). Sense of agency over one's professional learning is also shown to reduce the risk of experiencing burnout and subsequent attrition (Heikonen et al., 2016; Pyhältö et al., 2014, 2015; Soini et al., 2016; Yli-Pietilä et al., 2023). These are the risks that have been widely recognised among ECTs (e.g. Wolff et al., 2015; Heikonen et al., 2016). Prior research on early-career in-service teachers implies that although they are often highly enthusiastic, they also face significant challenges in early years of teaching (Feiman-Nemser, 2001; McCormick, 2006). Complex reality of work both with pupils in the classroom may lead not to high quality learning and agency but more to strategies of surviving for early career in-service teachers (Cochran-Smith et al., 2012; Heikonen et al., 2017; Eteläpelto, Vähäsantanen & Hökkä, 2015; Harmsen et al., 2018; Voss & Kunter, 2019).

Teachers' sense of professional agency has been found to vary across contexts (Emirbayer & Mische, 1998; Greeno, 2006; Heikonen et al., 2020; Lipponen & Kumpulainen, 2011; Pyhältö et al., submitted; Sullanmaa et al., 2021; Vermunt & Endedijk, 2011; Yli-Pietilä et al., 2023). Major contextual factors of teacher agency, such as teachers' pre- and in-service education systems, the school curriculum, degrees of professional autonomy, and school structures differ especially across countries. These may produce context-specific variations in terms of early career teacher agency over their learning in the classroom (see Adamson, 2012; Conway et al., 2009; Kutsyuruba et al., 2019) and, therefore the risk for experiencing burnout symptoms may also vary across countries (Feiman-Nemser, 2001; James & McCormic, 2009).

To be able to support teachers to develop and thrive in their career we need more information how early career teachers' professional agency is related to burnout symptoms, exhaustion, inadequacy in teacher-student interaction, and cynicism towards colleagues. More specifically, we need more understanding of the relation of professional agency in the classroom and experienced burnout across different contextual conditions. In this study, our aim is to contribute to this gap by exploring how early career teachers' sense of professional agency in the classroom is related to the experienced burnout symptoms and is the relation different across four European countries: the UK, the Netherlands, Finland, and Sweden.

Early Career Teachers' Professional Agency in the Classroom

Teachers' professional agency is relational (Edwards, 2005; Priestley et al., 2015) and embedded in social interaction, implying that colleagues and students may function as a resource for active and intentional professional learning (Pyhältö et al., 2012; Soini et al., 2016). Moreover, professional agency is an integrative construct consisting of the motivation to learn, efficacy beliefs about learning and skills or strategies for learning – aiming to construct a reciprocal and collaborative learning environment in the classroom with students (Pyhältö et al., 2012; Soini et al., 2016; see also Edwards, 2005; Sachs, 2000; Turnbull, 2005). This implies considering teaching as an interactive process in which both students and teachers learn (Martin & Dowson, 2009).

Teacher's sense of professional agency in the classroom involves continuous reflection on the teacher's own practice, students' thinking and behaviours, and the teacher-student interaction (see Beijaard, 2007; Bergum, 2003; Heikonen et al., 2017; Pietarinen et al., 2016; Soini et al., 2016; Toom et al., 2021). Through reflection, teachers can deepen their understanding of students' thinking and learning, question their prior beliefs, and find

new perspectives, hence further constructing their professional capabilities (see Loughran, 2002). In the early career phase, constructing one's sense of professional agency in the classroom is particularly essential. Teacher-student interaction has been shown to be one of the most essential aspects of teachers' work (Ginns et al., 2001; Hargreaves, 2000; Le Cornu, 2013). Accordingly, early career teachers' reflection and experimentation with diverse instructional practices have been shown to be related to changes in teachers' beliefs and practice (Bakkenes, Vermunt, & Wubbels, 2010; Meirink et al., 2009).

Despite the similarities in characteristics of early career teachers' induction phase, such as the need for professional support, have been identified broadly across educational systems, the early career teachers' sense of professional agency is always situated in a nested structure of a particular work environment in the classroom and school community, as embedded in the context of the national educational system, culture and society of a given country (Kuusisto, 2022). This contextual embeddedness includes factors such as the nature and structure of teacher education, legislation, trust and appreciation of teachers, teacher accountability and resources. Hence, it is likely that early career teachers' sense of professional agency, e.g., perceiving students (or colleagues) as resource for professional active and intentional learning, and its facilitators and restrictors vary across different contexts. For instance, there may be variance across national contexts in the (lack of) experienced autonomy for teacher or the accountability driven curriculum policies (Sloan, 2006), which might, accordingly, limit the teachers' motivation to learn, their efficacy beliefs about learning, and skills or strategies for enhancing their own development in the teaching profession. Due to this, early career teachers may also face different challenges or experience varying levels of professional uncertainty in the early years of their teaching profession. Such variance may further lead to differing levels of investing time and focus on classroom management rather than experimenting with innovative teaching methods with students (Flores, 2005; Ng, Nicholas, & Williams, 2010; Rozelle & Wilson, 2012; Grosemans et al., 2015; Meristo & Eisenschmidt, 2014; Heikonen et al., 2020). This, in turn, may in some settings more than others be likely to arouse the risk for experiencing gradually developing teacher burnout symptoms later in their work.

Teachers' Professional Agency in the Classroom in relation to Socio-contextual Teacher Burnout

Teachers' professional agency has been shown to be related to their work-related well-being and commitment to teaching (Eteläpelto et al., 2013; Soini et al., 2016; Vähäsantanen et al., 2008). However, if teachers are not willing and able to learn or if they lack the skills for learning in the classroom, that is, if they lack a sense of professional agency in the classroom, they might more easily feel drained and incompetent in their interaction with students. Early career teachers in general are also more vulnerable to feelings of disappointment and inadequacy (Berliner, 1986; Borko & Livingston, 1989; Leinhardt & Greeno, 1986; Wolff et al., 2015). Experiences of inadequacy, in turn, have been found to be related to early career teachers' considerations of leaving the profession (Heikonen et al., 2016).

Accordingly, teachers' perceived problems related to either the interaction or the work environment in the classroom are central risk factors for increased burnout among ECTs (Gavish & Friedman, 2010; Devos, Dupriez,

& Paquay, 2012; Pashiardis, 2000; Soini et al., 2015). Teacher burnout has been shown to impair a teacher's functioning, resulting in a decline both in the quality of their work and their personal health. Teacher burnout develops gradually as a result of extensive and prolonged work-related stress (Freudenberger, 1974; Holland, 1982; Peeters & Rutte, 2005). Burnout syndrome has three distinct symptoms: exhaustion (Maslach et al., 2001), cynicism (Bakker et al., 2008; Maslach & Leiter, 2005; Schaufeli & Buunk, 2003) and experiences of professional inadequacy (Brouwers & Tomic, 2000; Hakanen, Bakker, & Schaufeli, 2006; meta-analysis by Montgomery & Rupp, 2005). Exhaustion in this context refers to an experienced lack of energy and feelings of being strained at work (Maslach et al., 2001), whereas cynicism refers to a lack of interest in work in general, as well as a disaffected attitude to students, parents or colleagues, and a low organisational commitment (Schaufeli & Buunk, 2003). Professional inadequacy here refers to feelings of insufficient competence, and not being able to achieve occupational aims, such as those related to teacher-student interaction (Brouwers & Tomic, 2000; Hakanen et al., 2006; meta-analysis by Montgomery & Rupp, 2005).

Teacher burnout has been found to have several negative influences on teachers, including depression, sleep disturbance (Saleh & Shapiro, 2008; Shin et al., 2013), work–family conflict (Noor & Zainuddin, 2011), lower student achievement (Herman et al., 2018), reduced quality of instruction (Klusmann et al., 2008), reduced quality of teacher-student relationships (Whitaker et al., 2015), as well as early retirement and career turnover (Dupriez et al., 2016; Goddard & Goddard, 2006). Prior studies have also shown that although constructing a collaborative and reciprocal learning environment with students is related to fewer experiences of teacher inadequacy, teacher reflection can even contribute to more experiences of incompetence (Heikonen et al., 2016; Soini et al., 2016; Yli-Pietilä et al., 2023). Early career teachers are particularly likely to reflect actively on their classroom practice, and with high expectations and/or by experiencing challenges, reflection might even increase rumination and feelings of disappointment (Heikonen et al., 2016; Soini et al., 2016; Yli-Pietilä et al., 2023). However, previous research indicates that receiving social support and constructive feedback from peers and teacher educators as well as being treated equally in working community can help to prevent burnout symptoms among preservice and early career teachers (e.g., Chan, 2002; Väisänen et al., 2016; Maslach & Leiter, 2008; Maslach et al., 2001). Moreover, by developing participatory teaching practices with students seems to buffer teachers' perceived inadequacy in their teacher-student interaction (Heikonen et al., 2016; Soini et al., 2016; Väisänen et al., 2016; Yli-Pietilä et al., 2023).

The nature of teacher-student interaction is partly dependent on the national context, as different (teacher) educational systems have different requirements and responsibilities for teachers, curricula, emphases of pedagogical practices in the classroom, learning materials, and evaluation criteria (e.g., Wilson et al., 2006). As the learning cultures and teacher-student interaction in the classrooms in schools may also vary across the countries, in the present study we also expected early career teachers' experiences of burnout symptoms to differ. Moreover, during this study, the teacher-student interaction has to an extent been affected by the COVID-19 pandemic, forcing many nations into school closures with various distance learning solutions and forms of support for teachers, students and families, again with notable differences both within (e.g., according to age level of students) and between the national strategies across these settings (OECD 2021) in terms of whether schools were closed or transferred to on-line or hybrid forms of teaching or whether they carried out in-person contact teaching also throughout the pandemic. This has especially called and challenged the early career teachers' opportunities

and motivation to learn novel teaching practices, efficacy beliefs about being able to renew pedagogical practices, and skills or strategies for transforming teacher-student interaction, as it also influenced teaching practices in varying ways across study programs and countries. To our knowledge, there have been no previous studies examining the interrelation between early career teachers' sense of professional agency in the classroom and experienced burnout symptoms resulting from the COVID-19 pandemic. We aim to bridge this gap in the literature by examining the early career teachers' sense of professional agency and burnout symptoms across the four countries in Europe: the Netherlands, the UK, Finland, and Sweden.

Research Contexts: The UK, the Netherlands, Finland and Sweden

Even though the four European countries participating in this study (the UK, the Netherlands, Finland, and Sweden) share rather similar overall educational goals, such as promoting active and collaborative learning for students and emphasising teacher's professional learning (see e.g., Webb et al., 2009), there are also national educational characteristics that may hinder or enable early career teachers' perceived capacity to learn intentionally with students, and further develop their own teaching practices in the classroom. This, in turn, may contribute towards de- or increasing the experienced workload of the ECTs in different contexts.

More specifically, the contextual characteristics that may produce differences in terms of the early career teachers' sense of professional agency in the classroom and perceived burnout symptoms can be divided into the two main sources. Those are: (a) teacher education and teaching qualification requirements (i.e., ECTs' competencies adopted in the pre-service education) and (b) teacher's perceived autonomy and opportunities for enhancing professional learning at the induction phase (i.e., ECTs' in-service education opportunities and professional support systems, such as mentoring).

The teacher education programmes in the four countries differ mostly in terms of their length, academic level (bachelor's / master's degree) and the context of the teacher education (university, university of applied sciences, higher vocational education, or other), requirements regarding accreditation, the share of theoretical and research studies included in the degree programme, and the role, nature and extent of teaching practice (e.g., Conway et al., 2009). In the UK, there are several routes to obtain Qualified Teacher Status (QTS). Most teachers have completed a university bachelor's degree but teaching qualifications can also be obtained through a more practical, school-based form of teacher training (9 months full-time, or 18 to 24 months part-time) (Department of Education, 2023). In the Netherlands, primary and secondary teacher education differ from each other. There are three alternative routes for primary teacher education, in which academic pedagogical education is combined with higher vocational education (van der Wal-Maris et al., 2018).

There are also two alternative types of pedagogical education in secondary teaching qualifications that typically follow a master's degree in the subject to be taught. In Finland, teachers complete a master's degree, either in class teacher education (for teaching grade levels 1-6) or their subject domain, including pedagogical studies as minor subject (for primary and secondary school subject teachers). In Sweden, teacher education is largely similar to the Finnish system: primary school teachers (specialisation for school years 0-3, where class teacher typically

teaches all subjects, or the middle school grades 4-6) and both lower (7-9) and upper (10-12) secondary school teachers complete a master's degree including studies both in their subject area and the related didactics in order to have a teacher qualification (Alvunger & Wahlström, 2018). Such variance in the academic level of teacher education consequently influences also the required detail in National Curriculum documents: where the Finnish curriculum across educational levels leaves a notable degree of freedom and agency to each professional to implement their instruction according to their choosing (e.g. Koyuncu et al., 2023), the degree of detailedness in the equivalent documents guiding instruction in the UK is notably higher.

In terms of teachers' perceived freedom and responsibilities in the classroom, teachers' professional autonomy varies between the countries examined in this study (e.g., Webb et al., 2007). Dutch, Finnish and Swedish teachers have reported high levels of autonomy in their work in determining teaching content and having opportunities to participate in school-level decision-making (cf. Niemi et al., 2018), whereas the perceived autonomy of teachers has been measured lower in the UK (OECD, 2018). Also, the inspections and assessment measures for evaluating teachers' work seem to follow similar national characteristics. Sweden and the UK apply national tests to a number of grade levels across the country throughout the comprehensive school age groups, Finland, with the only nation-wide exam is carried out to year 12 academic track students in the university qualifying matriculation examination (A-level equivalent) leaves the main responsibility of assessing student progress throughout their formative years to teachers. Furthermore, in the UK, public accountability and control over teachers' work is stronger compared to the other countries studied (Webb et al., 2009). These county-based characteristics that regulate the teacher autonomy may illustrate the trust between the society and its teachers (Toom & Husu, 2012) and could affect the teachers' sense of professional agency in the classroom if they feel valued. In these four countries, the appreciation of the teaching profession has also been shown to vary. Only in Finland did most of the teachers agree that the teaching profession is valued in society (OECD, 2018).

The importance of ensuring professional and collaborative learning at the early phase of the career is recognised in all four countries (e.g. Webb et al., 2009). However, less than half of the teachers reported that they participated in collaborative professional learning in their school, and in Finland, this was so for only 9 per cent of the teachers (OECD, 2018). In turn, in the UK and Netherlands it is less common to support teachers' pedagogical development by co-teaching than in Finland and Sweden (OECD, 2018). In the Netherlands, Finland and Sweden, there are no systemwide induction systems for newly qualified teachers, while in the UK there is a statutory one-year induction phase for newly qualified teachers that includes a personalised programme of development, professional support and dialogue and ends with an assessment of performance against the relevant standards. In addition to the UK's formal induction phase as part of the teacher education, the schools in all four countries also have different formal or informal induction activities for new teachers. However, in Sweden, 70 per cent of the teachers reported that they did not take part in any induction activities in the school, while in other countries the proportion was well under 50 per cent. In the UK and the Netherlands, it is also more common to have an assigned mentor compared to the situation in Finland and Sweden (OECD, 2018).

While some of these contextual characteristics may be connected to the ways in which teaching practice periods are planned in already for the initial teacher education programmes, rather than during the induction phase, we

can see that all in all the early career teachers' transition from the teacher education to the teaching profession at schools is understood differently in these European countries (e.g., a statutory phase in teacher education vs. voluntary in-service training). Unlike in the UK, there is no system-wide induction system in the Netherlands, Finland, and Sweden.

Moreover, teachers' increased workload and its effect on their professional learning and appreciation of the teaching profession have been acknowledged in previous research for all these four countries (e.g., Soini et al., 2016; Vermunt & Endedijk, 2011; Yli-Pietilä et al., 2023). Almost 40 per cent of the teachers in the UK reported experiencing a lot of stress in their work, while the proportion in Sweden, Netherlands and Finland varied from 10 to 17 per cent (OECD, 2018). In addition, the risk of attrition was somewhat higher in Sweden and in the UK than in the Netherlands and Finland (OECD, 2018).

The Aim of this study

The aim of this study was to examine the relationships between the early career teachers' sense of professional agency in the classroom and their burnout symptoms as well as the contextual variation in these between the four here examined European countries, namely: the UK, the Netherlands, Finland and Sweden. Three research questions were raised:

1. Is the TPA in classroom constructed similarly across these four countries? Are the reported levels of TPA perceived differently by ECTs in different countries?
2. Is the socio-contextual burnout constructed similarly across these four countries? Are the reported levels of burnout perceived differently by ECTs in different countries?
3. Are TPA and burnout related and how (what is the direction of this relation)? If so, are there differences in their relation?

Based to our previous research we made the following indicative hypotheses:

1. Teacher's professional agency in the classroom is constructed by two modes of learning: collaborative learning environment and transformative practice (CLE) and reflection in the classroom (REF) (Pietarinen et al., 2016; Pyhältö et al., 2012, 2014; Soini et al., 2016). The construct is invariant across the countries.
2. Teachers' socio-contextual burnout is constructed of three dimensions: cynicism about the teaching community (CYN), inadequacy in teacher-student interaction (INAD) and exhaustion (EXH) (Pietarinen et al., 2013; Pyhältö et al., 2020; Tikkanen et al., 2021). The construct is invariant across the countries.
3. Both modes of TPA in the classroom (CLE + REF) are related to all dimensions of socio-contextual burnout (CYN+INAD+EXH). Previous studies suggest that a teacher's ability to transform classroom practices and learning environment with students (CLE) is negatively correlated with exhaustion (EXH), perceived inadequacy in teacher-student interaction (INAD) and cynicism about the teaching community (CYN), while a teacher's high tendency to reflect on classroom practices (REF) has a weaker negative or even modest positive relationship to exhaustion, feelings of inadequacy, and cynicism (Heikonen et al., 2016; Yli-Pietilä et al., 2023).

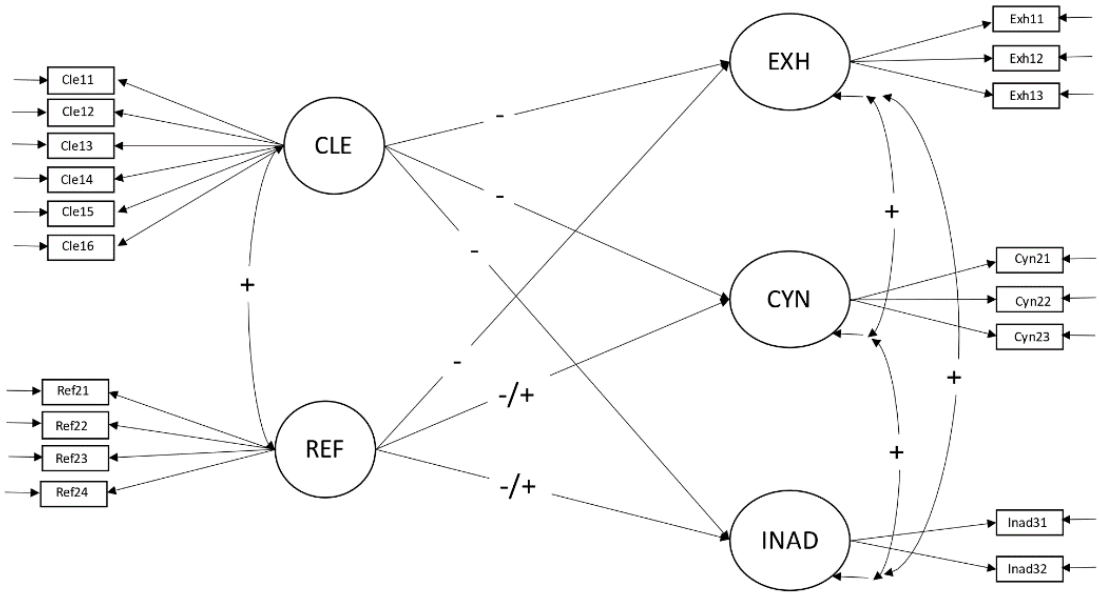

Figure 1. Hypothesised Model

Method

This study was conducted as a part of the "Early Career Teachers' Professional Agency Across Four European countries – Key for Sustainable Educational Change?" research project, funded by the Academy of Finland (2018-2022). The aim of the project was to gain a better understanding of the imperatives of active and intentional early career in-service teacher learning by exploring the professional agency of ECTs and its regulators across the four European countries studied, providing different environments for early career teacher learning.

Sample

The international comparison data included early-career (0-5 year work experience) primary, subject and special education teachers from the four countries. As expected in the teaching profession, most of the respondents were female and mean work experience was 2.6 years for all countries (Table 1). Teachers who reported that they were other teachers than primary to upper secondary school teachers and who had 8 years or more work experience were excluded from the analysis.

Table 1. Gender and Mean Work Experience

	Female	Male	Other	Prefer not to say	Missing*	Total	Work experience
the UK	1242	355	3	12	1035	2647	2.5
the Netherlands	368	116	0	0	206	690	2.9
Finland	173	26	1	1	82	283	2.7
Sweden	101	18	2	1	72	194	2.1
Total	1884	515	6	14	1395	3814	2.6

*High number of missing values is due to the large number of unfinished survey responses.

Data Collection

The data were collected during 2020 and 2021 as a Qualtrics e-survey. The respondents were reached through trade unions, university alumni organisations, and social media. In the UK, a research request was sent through the University Council for Education of Teachers (UCET, the teachers' trade union) and the National Education Union (NEU). In the Netherlands, the request was forwarded through the mailing lists of the universities. In Finland, the research request was sent through university mailing lists, the teachers' union and social media channels. In Sweden, data collection was conducted through social media groups for teachers. The instructions for participation included a link to the privacy notice and the respondents were asked to provide their informed consent before completing the survey.

The data collection was conducted following the European Federation of Academies of Sciences and Humanities (2017) European Code of Conduct for Research Integrity guidelines for responsible conduct of research and the ethical principles besides the national guidelines set for Finland, where the international project was hosted (ALLEA, 2017; Finnish Advisory Board on Research Integrity, 2019). Research permission and ethical evaluations were also aligned with any specific national guidelines set for the participating countries.

Measures

One challenge in studies conducted in different countries is having a valid instrument for all of the populations of interest. The aim of this study was to validate the TPA in the classroom scale and the socio-contextual teacher burnout scale in the UK, the Netherlands and Sweden. The survey was translated into English, Dutch and Swedish from Finnish, and pilot tested in the four countries. The pilot testing of the scales was conducted in two phases during 2018-2019:

-In the first phase, our international research team became familiar with the scales and the translations. Based on our joint discussions on the pilot phase, the necessary context-related changes were made to the scales, considering that the contents of the items did not change.

-In the second phase, a small group of teachers in the UK, the Netherlands and Finland responded to the survey and they also had an opportunity to comment on the items and open questions. In Sweden, one teacher commented through the survey instrument. After the pilot testing, some changes were made to finalise the scales. After that, a double check of the translations was made to ensure that every item had a similar meaning that could be understood in each country.

The participants completed the Early Career Teachers' Professional Agency survey, including scales measuring the sense of professional agency in the classroom and socio-contextual burnout. The professional agency in the classroom scale include two factors measuring a teacher's motivation, efficacy beliefs and skills to learn in the classroom (Soini et al., 2016): collaborative environment and transformative practice (CLE; six items), referring to active efforts and motivation to learn about dynamic and adaptive teaching methods and to construct a reciprocal

and collaborative learning environment in the classroom, and reflection in the classroom (REF; four items), entailing reflection about the motives and resources of others, and alignment of their own responses to these interpretations.

The socio-contextual teacher burnout scale was developed by Pietarinen et al. (2013b) drawing on Maslach and Jackson's (1981) burnout scale (see also Maslach et al., 2001; Taris et al., 2005; Bakker et al., 2008) and assumes that a teacher's social contexts, students and the teaching community are the key factors in burnout. It comprises three dimensions of burnout: exhaustion (EXH, three items) referring to feelings of strain, an excessive workload and feeling burnt out, cynicism about colleagues (CYN, three items) including experiences of outsiderness and disappointment with the work community, and inadequacy in teacher-student interaction (INAD, originally three items) entailing a teacher's experiences of questioning their competence or failing in the work with students. In the INAD scale, one item was dropped from the final analyses due to a translation inaccuracy in the Dutch survey resulting in only two items for inadequacy being used in the analysis. All of the items were rated on a 1-7 Likert scale, except EXH11 stress item on a 1-10. This EXH11 item was rescaled into 1-7 scale for the sem-analysis.

Data Analysis

Data were analysed using SPSS version 28.0 and Mplus version 8.6. First, the confirmatory factor analyses (CFA) were conducted using robust maximum likelihood estimation (MLR) for teacher's professional agency in the classroom measurement models (CLE and REF) and socio-contextual burnout measurement models (EXH, CYN, INAD) separately for all four countries. Alternative CFA models with one factor and correlated factors were compared. Goodness-of-fit was evaluated using $\chi 2$ test of model fit, the comparative fit index (CFI), the Tucker–Lewis index (TLI), and the root mean square error of approximation (RMSEA). Following Hu and Bentler (1999), CFI and TLI >0.95 and 0.90, and RMSEA <.05 and .08 were considered as the cut-off criteria accounting for excellent and respectively adequate model fit. One residual correlation between items Cle11 and Cle12 was added to reach sufficient fit for the Professional agency in the classroom scale. This modification was made to all country-specific models to maintain the same factorial structure for the invariance testing across countries.

Second, measurement invariance was tested across the four countries to explore the extent to which the instruments measure the same latent constructs across countries. The configural invariance, metric invariance, and scalar invariance models were compared by examining changes in CFI, RMSEA, and SRMR (Chen et al., 2005; Cheung & Rensvold, 2002; Wang & Wang, 2012). In this study, a change of < -0.010 in CFI value, and either a change of < 0.015 in RMSEA or < 0.010 in SRMR were used as cut-off values for the invariance (Chen, 2007). Full scalar invariance was the target for meaningfully examining the differences in the mean levels of latent constructs between countries. If it was not reached, partial invariance was tested, and further analyses conducted and interpreted accordingly. The standardised latent means were estimated in a multiple group CFA model and compared across the countries.

Next, the path model examining the relationship between professional agency in the classroom and socio-contextual burnout was estimated. The fixed estimates of the invariant measurement models of professional

agency and burnout were used as part of the path model for parsimony. The path model was tested in two ways: first, as a multiple group model with regression paths varying between countries, and second, as an invariant model with path coefficients constrained to be equal across countries. Finally, the statistical significance of the differences in path coefficients between the countries was tested using the model constraint option in Mplus.

Results

Teachers' Professional Agency in the Classroom: Factor Structures and Measurement Invariance Across Countries

The separate CFA analyses of teacher's professional agency (TPA) in the classroom measurement model for every country showed adequate model fit when one residual correlation (Cle11 and Cle12) was added to the model. The model fit indices for the CFAs for every country are shown in Table 2. The descriptive statistics for the items of the TPA in the classroom measurement, their factor loadings, and their discrimination indices for the total sample and each country can be seen in Appendix 1.

Table 2. Teacher Professional Agency in the Classroom: CFAs in the UK, the Netherlands, Finland and Sweden

Model	*nf*	CFI	TLI	RMSEA [90% CI]	SRMR	χ^2(*df*)	*scf*	*p*
the UK (n = 2632)								
Two-factor model	31	.884	.846	.075 [.070; .081]	.051	541.292 (34)	1.4525	.000
Two-factor model residual Cle11&12	32	.938	.916	.056 [.050; .062]	.046	302.407 (33)	1.4560	.000
the Netherlands (n = 676)								
Two-factor model	31	.903	.872	.069 [.058; .081]	.055	144.670 (34)	1.2432	.000
Two-factor model residual Cle11&12	32	.920	.891	.064 [.052; .076]	.054	123.869 (33)	1.2430	.000
Finland (n = 274)								
Two-factor model	31	.886	.849	.075 [.055; .094]	.063	85.902 (34)	1.1302	.000
Two-factor model residual Cle11&12	32	.903	.868	.070 [.050; .090]	.061	77.142 (33)	1.1337	.000
Sweden (n = 193)								
Two-factor model	31	.865	.821	.080 [.056; .104]	.065	75.650 (34)	1.1672	.0001
Two-factor model residual Cle11&12	32	.892	.853	.072 [.047; .097]	.061	66.207 (33)	1.1518	.0005

Multigroup confirmatory factor analyses were conducted on the adjusted measurement model of TPA in the classroom to test the measurement invariance across countries. The test showed configural and metric invariance for the model, that is, equal factor structure and factor loadings. The model fit estimates for the measurement invariance test are presented in Table 3. In addition, partial invariance was reached in the scalar level as all the intercepts could be constrained to be equal except Cle12 (Byrne, Shavelson & Muthén, 1989; Steenkamp & Baumgartner, 1998). This result indicates that the latent means across countries can be compared with caution

(Torregrosa et al., 2022) and there are differences in the mean levels of the item Cle12 across countries.

Table 3. Measurement Invariance of Teacher's Professional Agency in the Classroom

Model	*nf*	CFI	TLI	RMSEA [90% CI]	SRMR	χ^2(*df*)	*scf*	*p*	ΔCFI	ΔTLI	ΔRMSEA	ΔSRMR
Teacher's professional agency in the classroom												
Configural invariance	128	.929	.903	.062 [.057–.067]	.05	608.267 (132)	1.2461	.000				
Metric invariance	104	.928	.917	.057 [.053–.062]	.074	638.870 (156)	1.3269	.000	-.001	+.014	-.0005	+.024
Scalar invariance	80	.891	.891	.066 [.061–.070]	.084	911.195 (180)	1.2888	.000	-.037	-.026	+.009	+.001
Partial scalar invariance (free Cle12)	83	.900	.899	.063 [.059-.068]	.081	844.807 (177)	1.2925	.000	-.028	-.018	+.006	+.007

Socio-contextual Burnout: Factor Structures and Measurement Invariance across Countries

The separate CFA analyses of the socio-contextual teacher burnout in each country showed that the three-factor model fits the data well (see Table 4).

Table 4. Model Fit of the CFA Models of Socio-contextual Teacher Burnout in the UK, the Netherlands, Finland and Sweden

Model	*nf*	CFI	TLI	RMSEA [90% CI]	SRMR	χ^2(*df*)	*scf*	*p*
the UK (n = 1651)								
Three-factor model	27	.978	.964	.059 [.05; .07]	.028	113.58 (17)	1.071	.000
the Netherlands (n = 492)								
Three-factor model	27	.960	.933	.074 [.06; .09]	.046	63.03 (17)	1.043	.000
Finland (n = 206)								
Three-factor model	27	.999	.999	.013 [.00; .07]	.033	17.57 (17)	1.110	.417
Sweden (n = 126)								
Three-factor model	27	.971	.952	.066 [.00; .11]	.051	26.36 (17)	1.114	.068

The measurement invariance across the four countries was examined with multiple group CFA analyses. The metric invariance model showed a minor decrease in model fit, suggesting the invariance of factor loadings across countries (see Table 5). Full scalar invariance was not reached, but partial invariance held for all factor loadings and the item intercepts of Exh13, Cyn23 and Inad32.

Table 5. Measurement Invariance for Multiple Group CFA Models of Socio-Contextual Teacher Burnout

Model	*nf*	CFI	TLI	RMSEA [90% CI]	SRMR	$\chi^2(df)$	*scf*	*p*	ΔCFI	ΔTLI	ΔRMSEA	ΔSRMR
Socio-contextual burnout												
Configural invariance	108	.977	.962	.060 [.051–.069]	.034	217.84 (68)	1.085	.000				
Metric invariance	93	.971	.960	.061 [.054–.070]	.048	276.90 (83)	1.084	.000	-.006	-.002	+.001	+.014
Scalar invariance	78	.911	.898	.098 [.091–.105]	.077	683.02 (98)	1.059	.000	-.060	-.062	+.037	+.029
Partial scalar invariance (free EXH13, CYN23, INAD32)	87	.959	.948	.070 [.063-.078]	.054	358.86 (89)	1.078	.000	-.012	-.012	+.009	+.006

Note. Metric invariance = factor loadings constrained equal across countries, Scalar invariance = factor loadings and items intercepts constrained equal across countries, Partial scalar invariance = factor loadings constrained equal and a part of the item intercepts constrained equal. Metric invariance model compared against configural model, and scalar models compared against metric model.

nf = number of free parameters, CFI = comparative fit index, TLI = Tucker-Lewis index, RMSEA = root mean square error of approximation, 90 % CI = confidence interval for RMSEA, scf = scaling correction factor, Δ = change from configural model for the metric model, and change from metric model for the scalar models, Δχ2 = chi-square difference test value.

Levels of Teachers' Professional Agency in the Classroom and Socio-contextual Burnout and Differences between Countries

The mean levels of the observed items of the scales can be seen in Appendix B. All teachers reported high levels of perceived professional agency in the classroom. Finnish and Swedish ECTs reported about the same levels of Teacher's professional agency with each other, as well as British and Dutch ECTs. ECTs in the UK and the Netherlands experienced high levels of Collaborative environment and transformative practice, CLE (observed means 5.2-6.5 and 5.2-6.4 on the scale of 1-7), while corresponding values were slightly lower in Finnish (5.0-6.0) and Swedish (4.9-6.3). In Finland and Sweden, ECTs reported very high levels of Reflection (6.1-6.7 and 6.4-6.8, respectively), but the values in the UK (6.0-6.5) and Netherlands (5.9-6.6) were slightly lower.

The mean levels of burnout symptoms varied more between the countries. ECTs in the UK reported the highest levels of Exhaustion (EXH), from 5.0 to 6.8, and moderate levels of Cynicism about colleagues (CYN), from 3.5 to 4.2, and inadequacy in teacher-student interaction (INAD), from 3.4-4.2, whereas ECTs in the Netherlands experienced the lowest levels of all burnout symptoms: EXH from 3.5 to 5.0; CYN from 2.5 to 3.8; and INAD from 2.8 to 4.2. Finnish and Swedish teachers reported the highest levels of Inadequacy in teacher-student interaction (INAD, Finland: 3.0-4.8, Sweden: 2.9-4.8) and moderate levels of CYN (Finland: 2.9-3.7, Sweden: 1.5-4.0) and EXH (Finland: 3.5-5.8, Sweden: 4.1-5.9).

The partial scalar measurement invariance allowed cautious comparisons of the latent mean differences between countries. The standardised latent mean scores for these countries can be seen in Figures 2 and 3. The latent means scores can only be compared within one variable between countries and not between the variables. All latent means have been increased by one to reach values above zero to reach more illustrative figures. The ECTs from the UK were treated as the reference group and the factor means for the ECTs from the Netherlands, Finland and Sweden were estimated in relation to the reference group. Even though the ECTs in all four countries experienced high TPA in the classroom and moderate levels of burnout symptoms, some statistical differences were found.

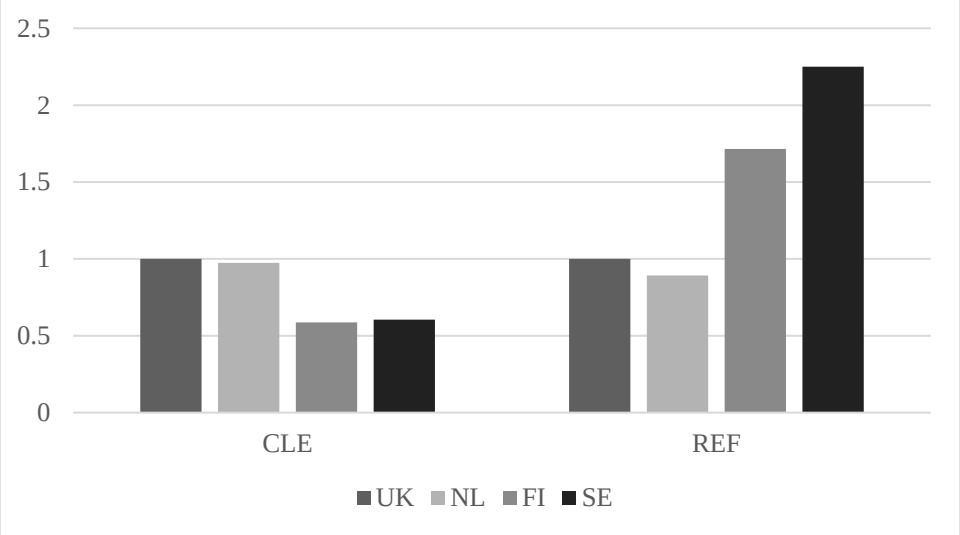

Figure 2. Standardised Latent Mean Scores of TPA in the Classroom in the UK, the Netherlands, Finland and Sweden

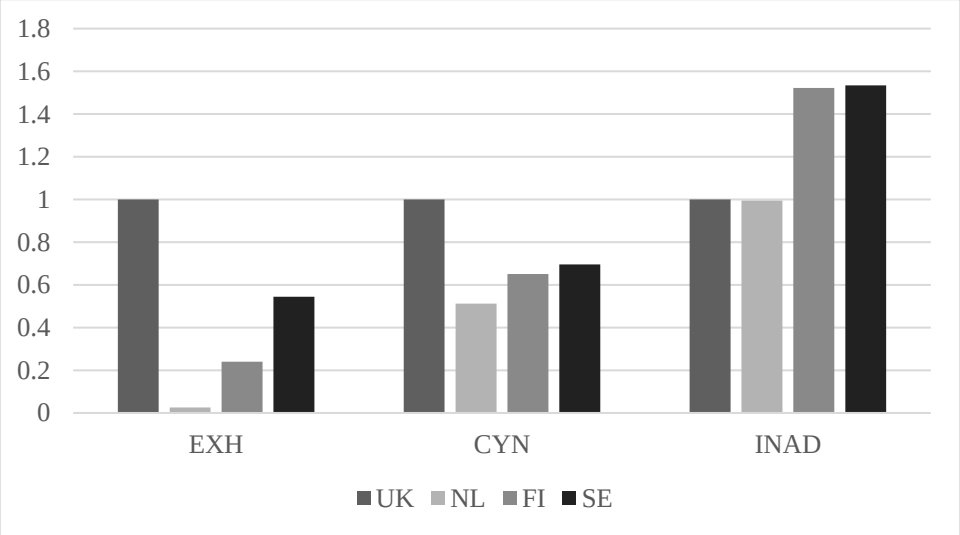

Figure 3. Standardised Latent Mean Scores of Socio-contextual Burnout in the UK, the Netherlands, Finland and Sweden

The test showed that the ECTs in Finland and Sweden experienced statistically significantly lower scores on collaborative environment and transformative practice (CLE) than the ECTs in the UK and the Netherlands. This

shows that the ECTs in the UK and in the Netherlands experience higher levels of motivation, efficacy beliefs and abilities to learn new classroom practices and transform learning environments with their students. However, the ECTs in Finland and Sweden experienced statistically significantly higher scores on reflection in the classroom than ECTs in the UK and the Netherlands. This implies that in Finland and Sweden the ECTs' sense of professional agency in terms of learning in the classroom is more intentionally driven by reflection and evaluation of their own teaching practices. In turn, ECTs in the UK and the Netherlands emphasised the experimental process of renewing teaching practices with students as their dominant way of learning intentionally in the classroom.

Regarding the burnout symptoms experienced, there were statistically significant differences in exhaustion latent mean levels between all countries. Similarly, the latent mean levels of cynicism about colleagues differed significantly between all countries, except for Sweden compared to Finland. The latent mean levels of inadequacy in teacher-student interaction differ for all countries, except between UK and the Netherlands, as well as between Finland and Sweden.

The Relationships between Teachers' Professional Agency in the Classroom and Socio-contextual Burnout

The CFA and measurement invariance results supported the construct validity of TPA in the classroom and socio-contextual teacher burnout measures, so the hypothesised SEM model was tested using fixed measurement models. The fit indices indicated a good fit to the data $\chi 2(681, N=3784, UK=2635, NL=682, FI=274, SE=193) = 1773.494$, p=.000, RMSEA=.041 (90% CI .039–.044), CFI=.930, TLI=.937, SRMR=.065. The path model and the regression coefficients can be seen in Figure 4.

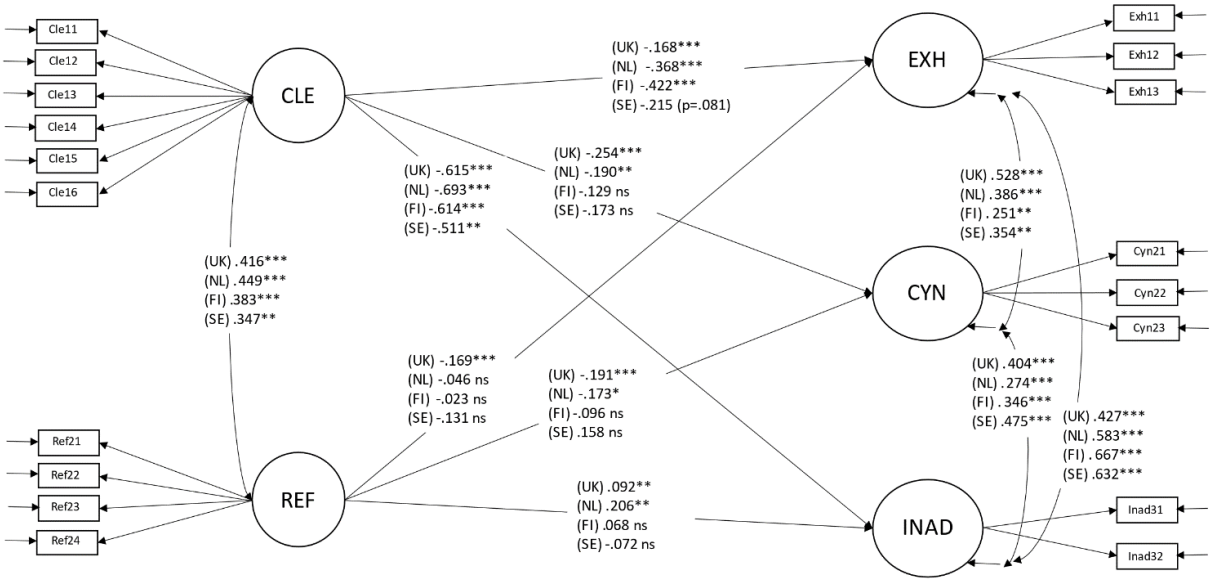

Figure 4. Multiple Group Path Model of TPA in the Classroom and Socio-contextual Burnout in the UK, the Netherlands, Finland and Sweden

The relationships were mostly in expected directions. Teachers' aims to build and transform the learning environment collaboratively with students (CLE) hindered all burnout symptoms in all four countries. The

negative relationship with inadequacy in teacher-student interaction (INAD) was the strongest in all countries. The relationship between reflection in the classroom (REF) and burnout symptoms were more complex. Teachers' tendency to plan, develop and assess classroom and teaching practices by reflecting was negatively related to exhaustion (EXH) and cynicism about colleagues (CYN), even though the relationships were statistically significant only among teachers in the UK and in the NL regarding the relationship with cynicism. In turn, the relationship with reflection and inadequacy was positive in all other countries but Sweden. Especially in the Netherlands but also slightly in the UK, reflection seems to increase feelings of inadequacy. However, the r-squares in Table 6 indicate that teachers' professional agency explained perceived inadequacy in teacher-student interaction most significantly compared to other burnout symptoms.

Table 6. Regression Difference Test and R-squares

Regression	**Regression difference**	**Regression**	**Regression difference**
CLE → EXH		**REF-EXH**	
UK-NL	**-.200****	UK-NL	.123
UK-FI	**-.254***	UK-FI	.146
UK-SE	-.047	UK-SE	.038
NL-FI	-.054	NL-FI	.077
NL-SE	.153	NL-SE	.331
FI-SE	.207	FI-SE	-.108
CLE→CYN		**REF-CYN**	
UK-NL	.064	UK-NL	.018
UK-FI	.125	UK-FI	.095
UK-SE	.081	UK-SE	.349
NL-FI	.061	NL-FI	.077
NL-SE	.017	NL-SE	.331
FI-SE	-.044	FI-SE	.254
CLE→INAD		**REF-INAD**	
UK-NL	-.078	UK-NL	.114
UK-FI	.001	UK-FI	-.024
UK-SE	**.104***	UK-SE	-.164
NL-FI	.079	NL-FI	-.138
NL-SE	**.182***	NL-SE	-.278
FI-SE	.103	FI-SE	-.140

R-square variance explained					
	EXH		**CYN**		**INAD**
UK	.08**	UK	.14**	UK	.34**
NL	.15**	NL	.10*	NL	.40**
FI	.19**	FI	.04ns	FI	.35**
SE	.08 p=.09	SE	.04ns	SE	.29*

** p < .01, *p < .05

The model fit remained at a sufficient level even after constraining the path estimates equal across countries, suggesting that the differences between countries are not pronounced. However, the larger datasets from the UK and the Netherlands may dominate here and mask minor differences. The multiple group path model showed some differences in regression paths between countries. We further tested the statistical significance of these differences (see Table 6). There were few statistical differences between the regressions. The clearest distinctions were between the UK and Finland and between UK and the Netherlands in the relation between collaborative learning environment and transformative practice (CLE) and exhaustion (EXH). In Finland, CLE seems to hinder EXH the most, while in the UK it is the least. There was a significant difference in the relationship between CLE and INAD when the Netherlands and the UK were compared to Sweden. In the UK and the Netherlands, CLE seems to decrease more feelings of inadequacy than in Sweden (and in Finland, even though the difference was not significant). There were no significant differences between the countries in the interrelationship between reflection in the classroom (REF) and the burnout symptoms.

Summary of Results

TPA in the classroom and socio-contextual burnout form (partially) invariant constructs that are related to each other in all countries. Especially the early career teachers' aims to transform and build collaborative learning environments with students (CLE) seems to decrease feelings of inadequacy and exhaustion. Its' relation with cynicism is also negative but not that strong.

The relationship between reflection in the classroom and burnout symptoms is in these analyses left somewhat unclear and requires further examination. Indicative results show that in the UK, reflection protects from teachers' exhaustion and cynicism, whereas most other relationships are not significant. However, especially in the Netherlands but also in the UK, teachers' reflection has a positive relationship with their feelings of inadequacy.

The results supported the set hypotheses. Teachers aim to build a collaborative environment and transform classroom practices with students, and this can tackle burnout, whereas learning by reflecting has more complex relations with burnout and may even increase feelings of inadequacy.

Discussion and Conclusions

The study explored the early career teachers' sense of professional agency in the classroom, their experiences of socio-contextual burnout symptoms and the interrelationships between these two across four European countries, namely the UK, the Netherlands, Finland, and Sweden. The results showed that both the structure of a teacher's sense of professional agency in the classroom and the socio-contextual burnout were invariant across the countries.

Teachers' sense of professional agency in the classroom comprised two modes of learning – collaborative learning environment and transformative practice (CLE) and reflection in the classroom (REF), and this constitutes the distinct but complementary dimensions of teacher learning in the classroom across the four countries. In general, teachers reported high levels of professional agency in the classroom in all four countries. However, some

differences were detected in the levels of teachers' sense of professional agency across the countries. The early career teachers in the UK and the Netherlands reported higher levels of engagement in collaborative learning environment and transformative practice compared to their peers in Finland and Sweden. In turn, the Finnish and Swedish teachers reported higher levels of reflection in the classroom compared with teachers in the UK and the Netherlands. The findings indicate that although the structure of teachers' sense of professional agency was similar across the countries, the level of such experience was more contextual, and hence affected by the socio-cultural context of teachers' work. A reason for the difference might be that in Finland and Sweden, teachers have high professional autonomy, and the research-based teacher education emphasises the role of reflection as the primary form of teacher development after their pre-service teacher education, while in the UK and in the Netherlands, teachers have less professional autonomy in regards to the classroom activities and teacher education is more practical and oriented to implementation of the curricula in classroom.

Similarly, socio-contextual burnout symptoms experienced by the early career teachers across the countries comprised of exhaustion, inadequacy in teacher student relationship and cynicism towards the teaching community. In general, teachers experienced moderate levels of burnout symptoms, and hence did not entertain particularly high risk of developing burnout (Fiorilli et al., 2015; Kuntz, Näswall, & Bockett, 2013), although the data were collected during the COVID-19 pandemic potentially adding to work related stressors (see e.g. Flores & Swennen, 2020; van der Spoel et al., 2020; Dvir & Schatz-Oppenheimer, 2020). However, differences in the levels of burnout symptoms across the countries were detected. British ECTs reported the highest levels of exhaustion and cynicism about colleagues, whereas Dutch teachers reported the lowest levels of all burnout symptoms compared to their peers in other countries. This may reflect more collective and collaborative solution-oriented working practices in the Netherlands compared to the UK as well as the shorter school closures during the lockdown. In turn, Finnish and Swedish ECTs reported the highest levels of inadequacy in teacher-student interaction. Previous studies show that feelings of inadequacy are more typical among early career teachers compared to other burnout symptoms (Heikonen et al., 2016). Overall, the findings indicate that regardless of differences in socio-cultural practices, teacher education, primary and lower secondary education systems, and the teacher's working conditions, the basic experience of early career teachers' sense of professional agency in the classroom and socio-contextual burnout is similar across the countries.

Further investigation showed that also the interrelation between the participating early career teachers' sense of professional agency and the experienced socio-contextual burnout was invariant across the countries. The relationship between the teachers' sense of professional agency in the classroom and socio-contextual burnout symptoms are mainly parallel and of the same strength. Accordingly, active and skilful learning in terms of professional agency in the classroom was related to reduced levels of the burnout symptoms experienced by induction phase teachers across the four countries. More specifically, building a collaborative learning environment and transformative practice with students was related to reduced levels of exhaustion, cynicism about colleagues and particularly the feelings of inadequacy in their student-teacher relationship. This implies that active and skilful teacher learning in the classroom may buffer early career teachers' socio-contextual burnout symptoms (Soini et al., 2016). Findings related to inadequacy are particularly interesting since it has been suggested that early career teachers are suffering from it (Heikonen et al., 2016). The relationship between burnout symptoms

and learning in terms of reflection in the classroom was more complex. Reflection in the classroom was reduced to exhaustion and cynicism about colleagues among British teachers. In turn, the relationship with reflection and inadequacy was positive in all the other countries except for Sweden. Especially in the Netherlands and in the UK, reflection seems to increase feelings of inadequacy.

The findings may imply that although learning through reflection has the potential to reduce exhaustion and cynicism about colleagues, since it enables problem solving and developing more effective instructional strategies, without experiencing competence for finding tools for action towards combatting the problems, without solution orientation it can lead to further rumination, and thus increase the early career teachers' sense of inadequacy further in their student-teacher relationship.

Practical Implications

Our results indicate that although the teacher education, educational systems and contextual characteristics vary across the four European countries, early career teachers seem to have a strong sense of professional agency in the classroom in their interaction and collaboration with the students. For instance, this is realised in daily work as experiencing high motivation to utilise feedback from students, self-efficacy beliefs about creating functional relationships with students and skills for adjusting teaching methods for different kinds of students and student groups. These results encourage the importance of significantly enhancing the early career teachers' capabilities for classroom interaction in both the pre-service teacher education and in supporting them during the induction phase of their teaching careers.

Furthermore, this active and skilful teacher learning in the classroom was related to reduced levels of burnout symptoms among early career teachers across the four countries – even during the COVID-19 pandemic when teaching practices and teacher-student interaction were challenged in many ways (e.g., lock down periods in many countries and online schooling). This may be related to the early career teachers' strong and extensive capabilities for digital and online teaching and capability to enact them in an unexpected and unpredicted situation (van der Spoel et al., 2020).

These findings are good news for school development: the ECTs' perceived intentions to learn more about the student-centred teaching practices in the classroom could be harnessed as a new resource for activating and sustaining the collegial reflection about the pedagogical practices adopted in the professional community (Pyhältö et al., 2015). This co-creative analysis of functional classroom practices with more experienced colleagues and learning to cross borders between the two main arenas in which teachers work - their professional community and classroom – may, in turn, support the early career teacher's own reflection in the classroom. It could do so by focusing on the more relevant contents, solution orientation and functional means to promote transformative classroom practices and collaborative learning environment for students (Pietarinen et al., 2016; Soini et al., 2016; Yli-Pietilä et al., 2023) instead of reflection focusing merely on the teacher-related challenges in the classroom without solutions. This also holds potential to buffer the observed risk that ECT's reflection in the classroom turns to rumination through which the ECT could increase their sense of inadequacy in the student-teacher relationship.

These findings further indicate the potential of early career teachers to work professionally in unexpected and uncertain situations, which can be extremely important in their professional careers and schools as professional communities.

These results also have some (invariant) implications for the development of the teacher education in a range of contexts. The findings confirmed that teachers' agentic learning in the classroom and occupational well-being have intertwined relation. Accordingly, learning conceptual tools and acquiring the functional means to identify, analyse and regulate this reciprocal and dynamic relationship individually, but also collectively with professional peers (i.e., boundary crossing), is crucial even in the pre-service teacher career phase. Moreover, and foremost, the findings suggest that the teacher's sense of professional agency in the classroom is constructed with students. Learning to co-regulate the teacher-student interaction in a way that strives for the best outcomes for both students and teachers, requires that pre-service teachers' perceived skills (I want), efficacy beliefs (I am able) and motivation (I want) to develop engaging teaching practices are intentionally facilitated during the teacher education. This should be elaborated and practiced extensively already in pre-service teacher education. It would be ideal for early career teachers to perceive students as co-constructors of learning in the classroom and perceive learning as joint shared activity. Adopting this as a general approach towards teacher's work would work as a significant professional resource for early career teachers.

Methodological Reflection

This study has several limitations that should be considered. First, the sample sizes varied widely between the countries. This has been noted using invariant fixed measurement models and when interpreting the results. However, sample sizes are proportional to the number of teachers by country. Second, the data sample includes a wide variety of early career teachers who teach student groups of different ages. There are primary school teachers as well as subject and special education teachers in primary and secondary levels. In forthcoming studies, it will be our aim to do more detailed comparisons between the experiences of those in different types of teacher professions.

Third, because of an error in the item translation we had to leave one item (Inad33) out of the scale. In addition, teachers tend to respond only high values on TPA scales, especially regarding reflection in the classroom. However, the structural validity and invariance test showed good fit. The TPA scale was partially invariant when the following intercept Cle12 (I'm able to create a good atmosphere with my students) was freed. Different mean levels in this item may be related to the contextual factors, such as how extensively collaboration is emphasised in the curricula in the countries investigated, how it is facilitated at the school level and among teachers as well as how capable teachers are reacting to it at the level of classroom interaction.

In addition, the socio-contextual burnout scale was partially invariant when the following intercepts were not constrained: Exh13 (With this work pace, I don't think I'll make it to retiring age), Cyn23 (I often feel like an outsider in my work community), and Inad32 (I often feel I have failed in my work with students). The variation in the levels of the socio-contextual burnout experienced may be related to the individual or collective way of

working in the four countries. Some may encourage teacher collaboration and collective problem-solving especially in the challenging situations, whereas others may have a tendency for more individualistic working.

Acknowledgements

The study was supported by the Academy of Finland [grant number 326647].

We sincerely thank Prof. Douwe Beijaard, Assoc. Prof. Peter Dudley, Dr. Monique van der Heijden, Prof. Riikka Hofmann, and Prof. Jan Vermunt for the contributions to the data collection and instrument development and MA Kaisa Haverinen for the methodological support.

References

Aboagye, M.O., Qin, J., Qayyum, A., Antwi, C.O., Jababu, Y., & Affum-Osei, E. (2018). Teacher burnout in pre-schools: A cross-cultural factorial validity, measurement invariance and latent mean comparison of the Maslach Burnout Inventory, Educators Survey (MBI-ES). *Children and Youth Services Review, 94*, 186–197. https://doi.org/10.1016/j.childyouth.2018.09.041

Adamson, B. (2012). International comparative studies in teaching and teacher education. *Teaching and Teacher Education, 28*(5), 641–648. https://doi.org/10.1016/j.tate.2012.02.003

ALLEA [The European Federation of Academies of Sciences and Humanities], (2017). *European Code of Conduct for Research Integrity.* https://allea.org/code-of-conduct/

Alvunger, D. & Wahlström, N. (2018). Based teacher education? Exploring the meaning potentials of Swedish teacher education. *Teachers and Teaching, 24*(4), 332–349.

Bakkenes, I., Vermunt, J.D., & Wubbels, T. (2010). Teacher learning in the context of educational innovation: Learning activities and learning outcomes of experienced teachers. *Learning and Instruction, 20*, 533–548.

Bakker, A.B., Schaufeli, W.B., Leiter, M.P., & Taris, T.W. (2008). Work engagement: An emerging concept in occupational health psychology. *Work & stress, 22*(3), 187–200.

Beijaard, D., Korthagen, F., & Verloop, N. (2007). Understanding how teachers learn. *Teachers and teaching, 13*(2).

Bergum, V. (2003). Relational pedagogy. Embodiment, improvisation, and interdependence. *Nursing Philosophy 4*, 121–128. https://doi.org/10.1046/j.1466-769X.2003.00128.x

Berliner, D.C., (1986). In pursuit of the expert pedagogue. *Educational researcher, 15*(7), 5–13.

Borko, H., & Livingston, C. (1989). Cognition and improvisation: Differences in mathematics instruction by expert and novice teachers. *American educational research journal, 26*(4), 473–498.

Bramberger, A., & Winter, K. (2021). Why Safe Spaces Are Needed. In Winter, K. and Bramberger, A. (Ed.), *Re-conceptualizing Safe Spaces.* Emerald Publishing Limited, Bingley, 13–31. https://doi.org/10.1108/978-1-83982-250-620211004

Brouwers, A. & Tomic, W. (2000). A longitudinal study of teacher burnout and perceived self-efficacy in

classroom management. *Teaching and Teacher Education, 16*(2), 239–253. https://doi.org/10.1016/S0742-051X(99)00057-8

Chan, D.W. (2002). Stress, self-efficacy, social support, and psychological distress among prospective Chinese teachers in Hong Kong. *Educational psychology, 22*(5), 557–569.

Conway, P.F., Murphy, R., Rath, A., & Hall, K. (2009). *Learning to Teach and its Implications for the Continuum of Teacher Education: A Nine Country Cross-national Study*. Teaching Council. https://www.teachingcouncil.ie/en/publications/research/documents/learning-to-teach-and-its-implications-for-the-continuum-of-teacher-education.pdf

Darling-Hammond, L., Wechsler, M. E., Levin, S., & Tozer, S. (2022). *Developing Effective Principals: What Kind of Learning Matters?* Learning Policy Institute.

Denton, E., Chaplin, W.F., & Wall, M. (2013). Teacher burnout: a comparison of two cultures using confirmatory factor and item response models. *Quantitative Research in Education, 1*(2).

Department of Education. (2023). *Train to teach if you have a degree or are studying for one.* (Read 29.9.2023). https://getintoteaching.education.gov.uk/train-to-be-a-teacher/if-you-have-a-degree

Devos, C., Dupriez, V., & Paquay, L. (2012). Does the social working environment predict beginning teachers' self-efficacy and feelings of depression? *Teaching and Teacher Education, 28*(2), 206–217.

Dupriez, V., Delvaux, B., & Lothaire, S. (2016). Teacher shortage and attrition: Why do they leave? *British Educational Research Journal, 42*(1), 21–39. https://doi.org/10.1002/berj.3193

Dvir, N., & Schatz-Oppenheimer, O. (2020). Novice teachers in a changing reality. *European Journal of Teacher Education, 43*(4), 639–656. https://doi.org/10.1080/02619768.2020.1821360

E., L., Toom, A., Sullanmaa, J., Pietarinen, J., Soini, T. & Pyhältö, K. (2022). How does teachers' professional agency in the classroom change in the professional transition from early career teachers to more experienced ones? *Learning: Research and Practice*. https://doi.org/10.1080/23735082.2022.2076148

Edwards, A. (2005). Relational agency: learning to be a resourceful practitioner. *International Journal of Educational Research, 43*(3), 168–182.

Emirbayer, M., & Mische, A. (1998). What is Agency? *American Journal of Sociology, 103*(4). https://doi.org/10.1086/231294

Eteläpelto, A., Vähäsantanen, K., Hökkä, P., & Paloniemi, S. (2013). What is agency? Conceptualizing professional agency at work. *Educational research review, 10*, 45-65.

Feiman-Nemser, S. (2001). Helping Novices Learn to Teach: Lessons from an Exemplary Support Teacher. *Journal of Teacher Education, 52*(1), 17–30. https://doi.org/10.1177/0022487101052001003

Fiorilli, C., Gabola, P., Pepe, A., Meylan, N., Curchod-Ruedi, D., Albanese, O., & Doudin, P.A. (2015). The effect of teachers' emotional intensity and social support on burnout syndrome. A comparison between Italy and Switzerland. *European Review of Applied Psychology, 65*(6), 275–283. https://doi.org/10.1016/j.erap.2015.10.003

Flores, M., & Swennen, A. (2020). The COVID-19 pandemic and its effects on teacher education. *European Journal of Teacher Education, 43*(4), 453–456. https://doi.org/10.1080/02619768.2020.1824253

Flores, M. (2005). Mapping new teacher change: findings from a two-year study. *Teacher Development, 9*(3), 389–412. https://doi.org/10.1080/13664530500200261

Freudenberger, H.J. (1974). Staff Burn-Out. *Social Issues, 30*(1), 159–165. https://doi.org/10.1111/j.1540-

4560.1974.tb00706.x

García-Arroyo, J.A., Segovia, A.O., & Peiró, J.M. (2019). Meta-analytical review of teacher burnout across 36 societies: the role of national learning assessments and gender egalitarianism. *Psychology & Health, 34*(6), 733–753. https://doi.org/10.1080/08870446.2019.1568013

García-Carmona, M., Marín, M.D., & Aguayo, R. (2019). Burnout syndrome in secondary school teachers: A systematic review and meta-analysis. *Social Psychology of Education: An International Journal, 22*(1), 189–208. https://doi.org/10.1007/s11218-018-9471-9

Gavish, B., & Friedman, I.A. (2010). Novice teachers' experience of teaching: A dynamic aspect of burnout. *Social psychology of education, 13*(2), 141–167.

Ginns, I.S., Heirdsfield, A.M., Atweh, B., & Watters, J.J. (2001). Beginning Teachers becoming Professionals through Action Research. *Educational Action Research, 9*(1). https://doi.org/10.1080/09650790100200140

Greeno, J.G. (2006). Authoritative, accountable positioning and connected, general knowing: Progressive themes in understanding transfer. *The Journal of learning sciences, 15*, 537–547.

Goddard, R., O'Brien, P., & Goddard, M. (2006). Work environment predictors of beginning teacher burnout. *British Educational Research Journal, 32*(6), 857–874. https://doi.org/10.1080/01411920600989511

Grosemans, I., Boon, A., Verclairen, C., Dochy, F., & Kyndt, E. (2015). Informal learning of primary school teachers: Considering the role of teaching experience and school culture. *Teaching and Teacher Education: An International Journal of Research and Studies, 47*(1), 151–161.

Hakanen, J.J., Bakker, A.B., & Schaufeli, W.B. (2006). Burnout and work engagement among teachers. *Journal of School Psychology, 43*(6), 495–513. https://doi.org/10.1016/j.jsp.2005.11.001

Hargreaves, A. (2000). Mixed emotions: teachers' perceptions of their interactions with students. *Teaching and Teacher Education, 16*(8), 811–826.

Harmsen, R., Helms-Lorenz, M., Maulana, R., & van Veen, K. (2018). The relationship between beginning teachers' stress causes, stress responses, teaching behaviour and attrition. *Teachers and Teaching, 24*(6), 626–643. https://doi.org/10.1080/13540602.2018.1465404

Heikonen, L., Pietarinen, J., Toom, A., Soini, T., & Pyhältö, K. (2020). The development of student teachers' sense of professional agency in the classroom during teacher education. *Learning: Research and Practice.* https://doi.org/10.1080/23735082.2020.1725603

Heikonen, L., Toom, A., Pyhältö, K., Pietarinen, J., & Soini, T. (2017). Student teachers' strategies in classroom interaction in the context of the teaching practicum. *Journal of Education for Teaching*. https://doi.org/10.1080/02607476.2017.1355080

Heikonen, L., Pietarinen, J., Pyhältö, K., Toom, A., & Soini, T. (2016). Early career teachers' sense of professional agency in the classroom: Associations with turnover intentions and perceived inadequacy in teacher-student interaction. *Asia-Pasific Journal of Teacher Education*. https://doi.org/10.1080/1359866X.2016.1169505

Herman, K.C., Hickmon-Rosa, J., & Reinke, W.M. (2018). Empirically Derived Profiles of Teacher Stress, Burnout, Self-Efficacy, and Coping and Associated Student Outcomes. *Journal of Positive Behavior Interventions, 20*(2), 90–100. https://doi.otg/10.1177/1098300717732066

Holland, R.P. (1982). Special educator burnout. *Educational Horizons, 60*(2), 58–64.

James, M., & McCormic, R. (2009). Teachers learning how to learn. *Teaching and teacher education, 25*, 973–982.

Kelchtermans, G. (2017). 'Should I stay or should I go?': unpacking teacher attrition/retention as an educational issue. *Teachers and Teaching, 23*(8), 961–977. https://doi.org/10.1080/13540602.2017.1379793

Klusmann, U., Kunter, M., Trautwein, U., Lüdtke, O., & Baumert, J. (2008). Engagement and Emotional Exhaustion in Teachers: Does the School Context Make a Difference? *Applied Psychology, 57*(1), 127–151.

Koyuncu, S., Kumpulainen, K., Kuusisto, A., (2023). Teaching English as a Second Language in the Early Years: Teachers' Perspectives and Practices in Finland. *Education Sciences, 13*(12), 1177. https://doi.org/10.3390/educsci13121177

Kuntz, J.R.C., Näswall, K., & Bockett, A. (2013). Keep calm and carry on? An investigation of teacher burnout in a post-disaster context. *New Zealand Journal of Psychology, 42*(2), 57–68.

Kutsyuruba, B., Walker, K.D., Makhamreh, M.L., & Stroud-Stasel, R. (2018). Attrition, Retention, and Development of Early Career Teachers: Pan-Canadian Narratives. *Education, 24*(1), 43-71.

Kutsyuruba, B., Walker, K.D., & Godden, L. (2019). Contextual factors in early career teaching: A systematic review of international research on teacher induction and mentoring programs. *Journal of Global Education and Research, 3*(2), 85–123. https://doi.org/10.5038/2577-509X.3.2.1057

Kuusisto, A. (2022). The Place of Religion in Early Childhood Education and Care. In A Kuusisto (Ed.), *The Routledge International Handbook of the Place of Religion in Early Childhood Education and Care*, 1–16. Routledge.

Le Cornu, R. (2013). Building Early Career Teacher Resilience: The Role of Relationships. *Australian Journal of Teacher Education, 38*(4). https://doi.org/10.14221/ajte.2013v38 n4.4

Leinhardt, G., & Greeno, J.G. (1986). The cognitive skill of teaching. *Journal of educational psychology, 78*(2), 75.

Lipponen, L., & Kumpulainen, K. (2011). Acting as accountable authors: Creating interactional spaces for agency work in teacher education. *Teaching and Teacher Education, 27*(5), 812–819.

Long, J.S., McKenzie-Robblee, S., Schaefer, L., Steeves, P., Wnuk, S., Pinnegar, E., & Clandinin, D.J. (2012). Literature Review on Induction and Mentoring Related to Early Career Teacher Attrition and Retention, Mentoring & Tutoring. Partnership in Learning, 20(1), 7–26. https://doi.org10.1080/13611267.2012.645598

Loughran, J.J. (2002). Effective Reflective Practice: In Search of Meaning in Learning about Teaching. *Journal of Teacher Education, 53*(1), 33–43. https://doi.org/10.1177/0022487102053001004

Mankki, V., & Räihä, P. (2020). Opettajankoulutuksen opiskelijavalintojen uudistamisen jatkumo: Tausta-agendoja ja sivuvaikutuksia. *Kasvatus & Aika, 14*(3), 4-19.

Maslach, C., & Leiter, M.P. (2005). Reversing burnout. *Standford Social Innovation Review, 34*(4), 43–49.

Maslach, C., & Leiter, M.P. (2008). Early predictors of job burnout and engagement. *Journal of Applied Psychology, 93*(3), 498–512. https://doi.org/10.1037/0021-9010.93.3.498

Maslach, C., Schaufeli, W.B., & Leiter, M.P. (2001). Job burnout. *Annual Review of Psychology, 52*, 397–422. https://doi.org/10.1146/annurev.psych.52.1.397

Martin, A.J., & Dowson, M. (2009). Interpersonal Relationships, Motivation, Engagement, and Achievement:

Yields for Theory, Current Issues, and Educational Practice. *Review of Educational Research, 79*(1), 327–365. https://doi.org/10.3102/0034654308325583

Meij, E., Smits, A., & Meeter, M. (2022). How and why learning theories are taught in current Dutch teacher education programs. Identifying a gap between paradigm and reality in teacher education. *Teaching and Teacher Education, 109.*

Meirink, J.A., Meijer, P.C., Verloop, N., & Bergen, T.C.M. (2009). How Do Teachers Learn in the Workplace? An Examination of Teacher Learning Activities. *European Journal of Teacher Education, 32*(3), 209–224.

Meristo, M., & Eisenschmidt, E. (2014). Novice teachers' perceptions of school climate and self-efficacy. *International Journal of Educational Research, 67*(1), 1–10.

Montgomery, C., & Rupp, A.A. (2005). A meta-analysis for exploring the diverse causes and effects of stress in teachers. *Canadian Journal of Education, 28*(3), 458–486. https://doi.org/10.2307/4126479

Ng, W., Nicholas, H., & Williams, A. (2010). School Experience Influences on Pre-Service Teachers' Evolving Beliefs about Effective Teaching. *Teaching and Teacher Education, 101,* 50–61. https://doi.org/10.1016/j.tate.2009.03.010

Niemi, H., Toom, A., Kallioniemi, A., & Lavonen, J. (2018). *The teacher's role in the changing globalizing world*. Leiden: Brill.

Noor, N.M., & Zainuddin, M. (2011). Emotional labor and burnout among female teachers: Work–family conflict as mediator. *Asian Journal of Social Psychology, 14*(4), 283–293. https://doi.org/10.1111/j.1467-839X.2011.01349.x

OECD (2018). *Teaching and Learning International Survey (TALIS).* Accessed on 03/15/22. https://www.oecd.org/education/talis/talis-2018-data.htm

OECD (2021). *The state of school education: One year into the COVID pandemic.* Report. https://www.oecd-ilibrary.org/education/the-state-of-school-education_201dde84-en?_ga=2.114456775.1137516154.1631184182-1596517200.1630496021

Pashiardis, G. (2000). School climate in elementary and secondary schools: Views of Cypriot principals and teachers. *International Journal of Educational Management.*

Peeters, M.A.G., & Rutte, C.G. (2005). Time Management Behavior as a Moderator for the Job Demand-Control Interaction. *Journal of Occupational Health Psychology, 10(*1), 64–75. https://doi.org/10.1037/1076-8998.10.1.64

Pietarinen, J., Pyhältö, K., & Soini, T. (2016). Teacher's professional agency – a relational approach to teacher learning. *Learning: Research and Practice*. https://doi.org/10.1080/23735082.2016.1181196

Pietarinen, J., Pyhältö, K., Soini, T., & Salmela-Aro, K. (2013a). Reducing teacher burnout: A socio-contextual approach. *Teaching and Teacher Education, 35,* 62–72.

Pietarinen, J., Pyhältö, K., Soini, T., & Salmela-Aro, K. (2013b). Validity and Reliability of the Socio-Contextual Teacher Burnout Inventory (STBI). *Psychology, 4*(1).

Pyhältö, K., Pietarinen, J., Haverinen, K., Tikkanen, L., & Soini, T. (2021). Teacher burnout profiles and proactive strategies. *European Journal of Psychology of Education, 36*(1), 219–242. https://doi.org/10.1007/s10212-020-00465-6

Priestley, M., Biesta, G.J.J., Robinson, S. (2015). *Teacher Agency: An Ecological Approach.* Bloomsbury

Academic: London, UK.

Pyhältö, K., Pietarinen, J., Haverinen, K., Tikkanen, L., & Soini, T. (2020). Teacher burnout profiles and proactive strategies. *European Journal of Psychology of Education*. https://doi.org/10.1007/s10212-020-00465-6

Pyhältö, K., Pietarinen, J., & Soini, T. (2015). Teachers' professional agency and learning – from adaption to active modification in the teacher community. *Teachers and teaching: Theory and Practice*. https://doi.org/10.1080/13540602.2014.995483

Pyhältö, K., Pietarinen, J., & Soini, T. (2014). Comprehensive school teachers' professional agency in largescale educational change. *Journal of Educational Change, 15*(3), 303–325. https://doi.org/10.1007/s10833-013-9215-8

Pyhältö, K., Soini, T., & Pietarinen, J. (2012). Do comprehensive school teachers perceive themselves as active agents in school reforms? *Journal of Educational Change, 13*(1), 95–116.

Romano, M. (2007). Successes and Struggles of the Beginning Teacher: Widening the Sample. The Educational Forum, 72(1), 63–78. https://doi.org/10.1080/00131720701603651

Rozelle, J.J., & Wilson, S.M. (2012). Opening the black box of field experiences: How cooperating teachers' beliefs and practices shape student teachers' beliefs and practices. *Teaching and Teacher Education, 28,* 1196–1205.

Sachs, J. (2000). The Activist Professional. *Journal of Educational Change, 1*, 77–94.

Saleh, P., & Shapiro, C.M. (2008). Disturbed sleep and burnout: Implications for long-term health. *Journal of Psychosomatic Research, 65*(1), 1–3. https://doi.org/10.1016/j.jpsychores.2008.05.028

Schaufeli, W.B., & Buunk, B.P. (2003). Burnout: An overview of 25 years of research and theorizing. *The handbook of work and health psychology*, *2*(1), 282–424.

Schwarzer, R., Schmitz, G.S., & Tang, C. (2000). Teacher Burnout in Hong Kong and Germany: A Cross-Cultural Validation of the Maslach Burnout Inventory. *Anxiety, Stress & Coping, 13*(3), 309–326. https://doi.org/10.1080/10615800008549268

Shin, H., Noh, H., Jang, Y., Park, Y.M., & Lee, S.M. (2013). A longitudinal examination of the relationship between teacher burnout and depression. *Journal of Employment Counseling, 50*(3). https://doi.org/10.1002/j.2161-1920.2013.00031.x

Sloan, K. (2006). Teacher Identity and Agency in School Worlds: Beyond the All-Good/All-Bad Discourse on Accountability-Explicit Curriculum Policies. *Curriculum Inquiry, 36*(2).

Soini, T., Pietarinen, J., & Pyhältö, K. (2016). What if teachers learn in the classroom? *Teacher Development, 20*(3). https://doi.org/10.1080/13664530.2016.1149511

Soini, T., Pietarinen, J., Pyhältö, K., & Tirri, K. (2014). The education context: strategies for promoting well-being and ethically sustainable problem solving in teacher pupil interactions. In Jindal-Snape, D. & Hannah, E. (eds), *Exploring the dynamics of ethics in practice: Personal, professional and interprofessional dilemmas*. Bristol: Policy Press.

Sullanmaa, J., Pyhältö, K., Pietarinen, J., & Soini, T. (2021). Relationships between change management, knowledge sharing, curriculum coherence and school impact in national curriculum reform: A longitudinal approach. *International Journal of Leadership in Education*. https://doi.org/10.1080/13603124.2021.1972165

Tikkanen, L., Pyhältö, K., Pietarinen, J., & Soini, T. (2021). Crossover of burnout in the classroom—is teacher

exhaustion transmitted to students? *International Journal of School & Educational Psychology, 9*(4), 326–339. https://doi.org/10.1080/21683603.2021.1942343

Toom, A., Pyhältö, K., Pietarinen, J., & Soini, T. (2021). Professional agency for learning as a key for developing teachers' competencies? *Education Sciences, 11*. https://doi.org/10.3390/educsci11070324

Toom, A., & Husu, J. (2012). Finnish teachers as 'makers of the many': Balancing between broad pedagogical freedom and responsibility. In Niemi, H., Toom, A., & Kallioniemi, A. (eds), *Miracle of Education: The principles and practices of teaching and learning in Finnish schools*. Rotterdam/Boston/Taipei: Sense Publishers, pp. 39–54.

Turnbull, M. (2005). Student Teacher Professional Agency in the Practicum. *Asia-Pacific Journal of Teacher Education, 33*(2), 195–208.

van den Borre, L., Spruyt, B., & van Droogenbroeck, F. (2021). Early career teacher retention intention: Individual, school and country characteristics. *Teaching and Teacher Education, 105*. https://doi.org/10.1016/j.tate.2021.103427

van der Spoel, I., Noroozi, O., Schuurink, E., & van Ginkel, S. (2020). Teachers' online teaching expectations and experiences during the Covid19-pandemic in the Netherlands. *European Journal of Teacher Education, 43*(4), 623–638. https://doi.org/10.1080/02619768.2020.1821185

van der Wal-Maris, S.J., Beijaard, D., Schellings, G.L.M., & Geldens, J.J.M. (2018). How meaning-oriented learning is enhanced in Dutch academic primary teacher education. *Teacher Development, 22*(3), 375–393. https://doi.org/10.1080/13664530.2018.1442874

Vermunt, J.D., & Endedijk, M.D. (2011). Patterns in teacher learning in different phases of the professional career. *Learning and Individual Differences, 21*(3), 294–302.

Vähäsantanen, K., Hökkä, P., Eteläpelto, A., Rasku-Puttonen, H., & Littleton, K. (2008). Teachers' professional identity negotiations in two different work organisations. *Vocations and Learning, 1*(2), 131–148.

Väisänen, S., Pietarinen, J., Pyhältö, K., Soini, T., & Toom, A. (2016). Social support as a contributor of student teachers' experienced well-being. *Research Papers in Education*. https://doi.org/10.1080/02671522.2015.1129643

Webb, R., Vulliamy, G., Sarja, A., Hämäläinen, S., & Poikonen, P.L. (2009). Professional learning communities and teacher well-being? A comparative analysis of primary schools in England and Finland. *Oxford Review of Education, 35*(3), 405–422. https://doi.org/10.1080/03054980902935008

Whitaker, R.C., Dearth-Wesley, T., & Gooze, R.A. (2015). Workplace stress and the quality of teacher–children relationships in Head Start. *Early Childhood Research Quarterl, 30*, 57–69. https://doi.org/10.1016/j.ecresq.2014.08.008

Wilson, L., Andrew, C., & Below, J. (2006). A comparison of teacher/pupil interaction within mathematics lessons in St Petersburg, Russia and the North-East of England. *British Educational Research Journal, 32*, 411–441. https://doi.org/10.1080/01411920600635429

Wolff, C., van den Bogert, N., Jarodzka, H., & Boshuizen, H. (2015). Keeping an eye on learning: Differences between expert and novice teachers' representations of classroom management events. *Journal of Teacher Education, 66*, 68–85.

Yli-Pietilä, R., Soini, T., Pietarinen, J., & Pyhältö K., (in press). Primary School Teachers' Sense of Professional Agency and Inadequacy in Teacher–Student Interaction. *Teacher Development*.

Yli-Pietilä, R., Soini, T., Pietarinen, J., & Pyhältö K., (2023). Profiles of teacher's professional agency in the classroom across time, *Scandinavian Journal of Educational Research*. https://doi.org/10.1080/00313831.2023.2196536

Author Information

Roosa Yli-Pietilä
https://orcid.org/0000-0003-2543-7279
Tampere University
Faculty of Education and Culture
Åkerlundinkatu 5, 33100 Tampere
Finland
Contact e-mail: *roosa.yli-pietila@tuni.fi*

Kirsi Pyhältö
https://orcid.org/0000-0002-8766-0559
University of Helsinki
Faculty of Educational Sciences
Siltavuorenpenger 5, 00170 Helsinki
Finland

Janne Pietarinen
https://orcid.org/0000-0003-4696-1977
University of Eastern Finland
School of Applied Educational Science and Teacher Education
Yliopistonkatu 7, 80130 Joensuu
Finland

Auli Toom
https://orcid.org/0000-0002-3261-3376
University of Helsinki
Faculty of Educational Sciences
Siltavuorenpenger 5, 00170 Helsinki
Finland

Arniika Kuusisto
https://orcid.org/0000-0002-6085-576X
University of Helsinki
Faculty of Educational Sciences
Siltavuorenpenger 5, 00170 Helsinki
Finland

Tiina Soini
https://orcid.org/0000-0002-0637-8931
Tampere University
Faculty of Education and Culture
Åkerlundinkatu 5, 33100 Tampere
Finland

Appendix A. Scales and Items

Teacher agency in the classroom

Collaborative environment and transformative practice

Cle11	I've been able to build good relationships with my students.
Cle12	I'm able to create a good atmosphere with my students.
Cle13	I know how to utilise the feedback I get from my students.
Cle14	I'm able to adjust my teaching for different student groups.
Cle15	I'm able to find teaching methods to engage even the most challenging student groups.
Cle16	I'm able to find ways to support the learning of all my students.

Reflection in the classroom

Ref21	I still want to learn much more about teaching.
Ref22	I'd like to develop a better understanding of students' ways of thinking and behaving.
Ref23	I regularly try to evaluate how well I have succeeded in teaching situations.
Ref24	I think teachers and students can all learn something in a teaching situation.

Socio-contextual burnout inventory (STBI)

Exhaustion

Exh11: Stress means a situation in which a person feels tense, restless, nervous or anxious or is unable to sleep at night because his/her mind is troubled all the time. Do you feel this kind of work-related stress?
Exh12: I feel burnt out.
Exh13: With this work pace I don’t think I’ll make it to the retiring age.

Cynicism towards the teaching community

Cyn21: I’m disappointed in our teaching community’s ways of handling our shared affairs.
Cyn22: In spite of several efforts to develop the working habits of our teaching community they haven’t really changed.
Cyn23: I often feel like an outsider in my work community.

Inadequacy in teacher-student interaction

Inad31: The challenging students make me question my abilities as a teacher.
Inad32: I often feel I have failed in my work with students.
~~Inad33: Dealing with problem situations considering my students often upsets me.*~~
* Item Inad33 was left out of the scale because of an error in the item translation.

Appendix B. The Descriptive Statistics for the Items of the TPA in the Classroom and Socio-contextual Burnout Measurements for the Total Sample and Each Country

Teacher's professional agency in the classroom													
UK							NL						
Item	n	Missing	M	Skewness	Kurtosis	Min/Max	Item	n	Missing	M	Skewness	Kurtosis	Min/Max
CLE11	2633	14	6.5	-1.26	2.13	3/7	CLE11	675	15	6.4	-1.24	3.23	2/7
CLE12	2631	16	6.2	-1.41	3.83	1/7	CLE12	675	15	6.0	-1.35	4.28	2/7
CLE13	2629	18	5.7	-1.07	2.28	1/7	CLE13	674	16	5.8	-.83	1.79	2/7
CLE14	2627	20	5.9	-1.17	3.30	1/7	CLE14	674	16	5.7	-1.22	2.75	2/7
CLE15	2633	14	5.2	-1.13	1.48	1/7	CLE15	676	14	5.2	-1.13	1.45	1/7
CLE16	2633	14	5.4	-1.25	2.26	1/7	CLE16	676	14	5.4	-1.11	2.08	1/7
REF21	2633	14	6.3	-2.02	5.54	1/7	REF21	676	14	6.2	-1.80	4.40	1/7
REF22	2628	19	6.0	-1.43	3.46	1/7	REF22	674	16	6.0	-1.30	2.42	1/7
REF23	2633	14	6.1	-1.25	2.77	1/7	REF23	674	16	5.9	-1.24	2.63	2/7
REF24	2627	20	6.5	-1.56	4.01	2/7	REF24	674	16	6.6	-3.07	15.89	1/7
FI							SE						
CLE11	274	9	6.0	-1.20	2.92	2/7	CLE11	192	2	6.3	-1.40	3.05	3/7
CLE12	274	9	5.7	-.98	2.09	2/7	CLE12	192	2	5.7	-.92	.88	2/7
CLE13	273	10	5.7	-.79	1.52	2/7	CLE13	192	2	5.3	-.95	1.64	1/7
CLE14	274	9	5.7	-.97	1.79	2/7	CLE14	192	2	5.5	-1.16	2.52	1/7
CLE15	274	9	5.0	-.72	.14	1/7	CLE15	192	2	5.0	-.90	1.09	1/7
CLE16	273	10	5.0	-.65	-.07	1/7	CLE16	192	2	4.9	-.72	.17	1/7
REF21	274	9	6.5	-1.67	2.50	3/7	REF21	192	2	6.7	-4.35	23.39	1/7
REF22	274	9	6.5	-1.10	.62	4/7	REF22	192	2	6.4	-1.96	5.79	2/7
REF23	273	10	6.1	-1.47	3.50	1/7	REF23	192	2	6.5	-2.70	11.59	1/7
REF24	273	10	6.7	-1.69	1.99	5/7	REF24	192	2	6.8	-2.77	7.24	5/7
Socio-contextual burnout													
UK							NL						
Item	n	Missing	M	Skewness	Kurtosis	Min/Max	Item	n	Missing	M	Skewness	Kurtosis	Min/Max
EXH11	1629	1018	6.8	-.55	-.53	1/10	EXH11	492	198	5.0	.05	-1.11	1/10
EXH12	1650	997	5.0	-.64	-.56	1/7	EXH12	487	203	3.5	.31	-1.10	1/7
EXH13	1651	996	5.1	-.69	-.77	1/7	EXH13	487	203	4.3	-.21	-1.26	1/7
CYN21	1645	1002	4.2	-.01	-.94	1/7	CYN21	486	204	3.3	.41	-1.01	1/7
CYN22	1648	999	3.9	.12	-.83	1/7	CYN22	485	205	3.8	.08	-.91	1/7
CYN23	1649	998	3.5	.38	-1.13	1/7	CYN23	487	203	2.5	1.05	.03	1/7
INAD31	1649	998	4.2	-.08	-1.22	1/7	INAD31	487	203	4.2	-.18	-1.16	1/7
INAD32	1651	996	3.4	.46	-.85	1/7	INAD32	485	205	2.8	.86	-.31	1/7
FI							SE						
EXH11	205	78	5.8	-.27	-1.15	1/10	EXH11	124	70	5.9	-0.30	-1.08	1/10
EXH12	206	77	3.5	0.31	-1.18	1/7	EXH12	126	68	4.1	-0.14	-1.28	1/7
EXH13	206	77	4.3	-0.12	-1.44	1/7	EXH13	126	68	4.4	-0.26	-1.44	1/7
CYN21	206	77	3.7	0.16	-1.13	1/7	CYN21	125	69	4.0	-0.15	-0.58	1/7
CYN22	203	80	3.5	0.17	-0.80	1/7	CYN22	126	68	3.6	-0.13	-0.79	1/7
CYN23	206	77	2.9	0.58	-0.82	1/7	CYN23	126	68	1.5	2.90	9.15	1/7
INAD31	206	77	4.8	-0.59	-0.81	1/7	INAD31	126	68	4.8	-0.68	-0.64	1/7
INAD32	205	78	3.0	0.91	0.00	1/7	INAD32	126	68	2.9	0.96	0.17	1/7