

## Teachers' Professional Self-Efficacy for Collaboration: A Comparison Between European Countries

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### ABSTRACT

Since the understanding of non-cognitive skills and their importance have grown, it becomes more and more significant to measure their impact on different areas of professional life. It has been researched that not only individual teacher's professional self-efficacy, but also collective self-efficacy has a significant impact on both the teachers' self-efficacy and students' achievement. The purpose of this study is to select a set of factors that correlate with teachers' professional self-efficacy and to analyse if teachers' professional self-efficacy has an impact on teachers' cooperation with colleagues and students.

Latvian, Lithuanian, Estonian, Danish, Norwegian, Swedish, and Finnish data from the OECD TALIS 2018 teacher questionnaires were used.

To analyse which factors correlate with teachers' professional self-efficacy, the authors of this article selected such variables as the type of school, the type of urbanization, the number of special education students in the class, full time or partial time employment, professional development courses and the professional development at university level. The authors found that there were no significant correlations between the type of school, the type of urbanization, and the number of special education students in the classroom, but there was a significant correlation between professional development courses and the professional development during the university study period. The teachers who worked full time job were more self-efficient than others. To study the impact of self-efficacy on collaboration, the authors of this article selected variables that represented teacher – student collaboration and teacher – teacher collaboration. The professional self-efficacy scale was partitioned into four efficacy levels and each level was analysed with answers from each variable. The group comparison and the linear regression analysis showed that teachers with higher self-efficacy levels cooperated more and better with students and colleagues. Thus, this research adds supplementary evidence to studies showing the importance of professional self-efficacy development.

*Keywords:* teacher's professional self-efficacy, OECD, TALIS 2018, professional collaboration, teacher – student collaboration, large-scale studies of education

## Introduction

It has been a concern throughout the history of education, how to ensure teachers' effectiveness and continuously promote educators' knowledge development according to changing workforce requirements and classroom environments, as well as how to foster teachers' feelings and beliefs of professional competence. In the last twenty years a large amount of research has been published that emphasizes the role of non-cognitive skills and personality traits to be as important or even in some cases more important than high IQ. OECD highlights that term "non-cognitive skills" in the scientific literature is described as different attributes that characterise personality, including socio-emotional and soft skills, and are not measured with IQ tests (Kautz et al., 2014). Self-efficacy is widely researched as mediator in one or more personality traits and values (De Feyter et al., 2012; Barni et al., 2019; Mammadov, 2021). In return McIntyre and Vecchione (2016) emphasize the role of self-efficacy as basis of self-confidence and a source of further self-efficacies development.

Bandura (2001) has defined self-efficacy as a belief in one's possibility to perform successfully in the given situation. Teacher's efficacy in terms of effectiveness is defined as a teacher's set of attitudes and/or behaviours that has impact on students' achievement (Klassen & Tze, 2014), but teacher's self-efficacy – as teacher's sense of the extent to which he/she can perform an action successfully (Granziera & Perera, 2019). Skaalvik and Skaalvik (2007) distinguish the difference between teacher's self-efficacy and effectiveness or external control, whereas Sehgal et al. (2017) provide evidence that teacher's self-efficacy influence effectiveness. Traditionally, teacher's effectiveness as well as teacher's self-efficacy have been measured in terms of what students do or as Tschannen-Moran and Hoy (2001) state: how well one can perform one's primary tasks even in difficult situations like engaging difficult students, giving the best explanation in difficult subject area, etc.

Self-efficacy is of importance not only when personality traits are considered. As early as in 1976 an article was published by Armor et al. (1976) that associated teachers' self-efficacy with students' achievement emphasizing its significant role in teaching profession. Similar associations were found in Caprara et al. (2006) study, but Zee and Koomen (2016) argued that most cited studies claiming this relationship might be theoretical in nature. Some authors argue that teachers' sense of self-efficacy is a belief that affects teaching performance and future career path especially for the first-year in-service teachers (Hoy & Spero, 2005), whereas others emphasize that teachers' effectiveness and subsequent behaviour have long-lasting impact on students (Wright et al., 1997). Klassen and Tze (2014) in their meta-analytic review provided evidence for teachers' sense of self-efficacy being more significant in students' achievement than the number of students in the classroom, students' previous achievement or socio-economic

status (SES). Chesnut and Burley (2015) suggest that teachers with higher self-efficacy levels are more committed to teaching profession. Large body of research is dedicated to teachers' professional self-efficacy and job satisfaction. Ahrari et al. (2021) in meta-analysis study established positive link between these two concepts. Aloe et al. (2014) provided evidence that significant relationship exists between teachers' self-efficacy in classroom management and burnout. Bandura (1997) emphasized that low self-efficacy beliefs can override the best skills, making people to give up when facing difficulties, whereas Vancouver et al. (2001) warn that self-efficacy can negatively influence performance, if it has been formed under inappropriate conditions.

It has been researched that not only individual but collective self-efficacy exists. Bandura (1997) suggested that this efficacy creates a type of social system. Collective efficacy is created in the school environment where two or more teachers work as a team. Skaalvik and Skaalvik (2007) have suggested that teachers' individual self-efficacy should be distinguished from collective efficacy although individual self-efficacy is strongly related with collective efficacy. When applying collective self-efficacy strategies, individual instructional process is managed more effectively (Cansoy et al., 2020). Sehgal et al. (2017) emphasize that collaboration among teachers works as critical factor for teachers' individual self-efficacy, but OECD (2020) stresses the role of interdependent collaboration in building higher levels of teacher's self-efficacy.

Some authors point out that teachers working with highly achieving students (Fackler & Malberg, 2016) and in a well-managed classroom setting (Woolfolk, Rosoff, & Hoy, 1990) show higher levels of self-efficacy. These teachers are less controlling and better at teacher-student interaction (Fackler & Malberg, 2016; Martin et al., 2012). Teachers felt less self-efficacious and less satisfied with their job when facing disruptive students (Zee & Koomen, 2016; Geske & Ozola, 2015).

Butler (2012) found that if a teacher has social motivation (goal) to teach then one will engage more in teacher-student relationships and will use better instructional including mastery-oriented teaching techniques. Usage of these techniques ensures higher reading achievement for 4th grade students (Ozola & Geske, 2019). Chang et al. (2022) discovered that teachers' social goals were positively correlated with self-efficacy for student engagement and classroom management and corresponded to students behavioural and emotional engagement. In addition, Torsney et al. (2019) concluded that social utility value predicted professional engagement and job satisfaction.

As self-efficacy phenomenon was found and researched beginning with mid-19th century, there had been many attempts to create a measurement tool for teachers' self-efficacy, some of them are cited in Lazarides's and Warner's (2020) article. Some authors have argued that self-efficacy according to Bandura's theory is unidimensional, task specific and future oriented (Marsh et al., 2018), some

emphasized that self-efficacy measurement instruments should measure just task performance, not goal achievement or general personality traits (Pajares, 1996). Tschannen-Moran and Hoy (2001) created and validated a three-dimensional 24 item self-evaluation survey for teachers that measured teacher's professional self-efficacy in: classroom management (8 items, like "How much can you do to control disruptive behaviour in the classroom?"), student engagement (8 items, like "How much you can do to get students to believe they can do well in school-work") and instructions (8 items, like "To what extent can you use a variety of assessment strategies?"), providing comprehensive tool that includes main aspects of teacher's everyday work life.

The aim of this study was to research whether there is a relationship between teacher's professional self-efficacy, motivation, collaboration, and work satisfaction and, if the relationship exists, then is there any difference in trait of collaboration between teachers with high and low self-efficacy. The research questions are formulated hereafter: to what extent a correlation exists between teachers' self-efficacy and chosen factors and, whether there is a difference among collaborative patterns between teachers with high self-efficacy and low self-efficacy.

## Methodology

The Organisation for Economic Co-operation and Development (OECD) Teaching and Learning International Survey (TALIS) takes place every five years, and its purpose is to examine teachers' working conditions, teachers' attitudes and work satisfaction with the aim to improve students' learning environment. In the TALIS 2018, 260'000 teachers from 48 countries all over the world participated in the survey.

## The Sample

To examine a teacher's professional self-efficacy (TPSE) the authors of this research analysed responses from the TALIS 2018 teachers' questionnaire. In total 20'106 respondents from all countries of comparison were selected in the TALIS two stage random sampling design. In the first stage random sample of 200 schools from every country were selected and in the second stage random sample of 20 teachers from each school were selected.

As countries of comparison all three Baltic countries – Latvia, Lithuania and Estonia, and the Nordic countries – Denmark, Norway, Sweden and Finland were chosen. These two sets of countries represent similar working conditions and share similar history of school development and teachers' education.

### Self-efficacy Measurement Methodology

To measure TPSE in the TALIS 2018 teachers' questionnaire Self-efficacy Composite (T3SELF) scale was used. This scale was created according to Tschanen-Moran and Hoy (2001) three-dimensional measurement instrument and includes: self-efficacy in classroom management (T3SECLS), self-efficacy in instruction (T3SEINS) and self-efficacy in student engagement (T3SEENG). All three subscales were created from the items of teachers' questionnaire question: "In your teaching, to what extent can you do the following?". There were four answer options in the Likert-type scale from "Not at all" (1 point) to "A lot" (4 points).

Items that referenced student behavioural management in the classroom were used to create T3SECLS subscale:

- Control disruptive behaviour in the classroom;
- Make my expectations about student behaviour clear;
- Get students to follow classroom rules;
- Calm a student who is disruptive or noisy.

Items that referenced instructional strategies were used to create T3SEINS subscale:

- Craft good questions for students;
- Use a variety of assessment strategies;
- Provide an alternative explanation, for example, when students are confused;
- Very instructional strategies in my classroom.

Items that referenced strategies for student engagement in the lessons were used to create T3SEENG subscale:

- Get students to believe they can do well in school work;
- Help students value learning;
- Motivate students who show low interest in school work;
- Help students think critically.

The composite value for the T3SELF scale for every teacher was calculated as a mean value from three subscales (T3SECLS, T3SEINS, T3SEENG). T3SELF average value was 12.8, the lowest value was 3.2 and the highest – 16.6. The Cronbach-Alpha reliability coefficients for the T3SELF scale varied from 0.76 for Estonia to 0.87 for Finland.

In order to measure the difference between teachers with different TPSE levels the authors of this research created a new variable T3SELF\_LEVELS. All teachers were partitioned into four equal groups depending on the value of scale T3SELF with the help of percentiles, where:

- low TPSE level (lowest 25%) was for teachers whose T3SELF scale's values were below 11.5;
- high TPSE level (highest 25%) was for teachers whose T3SELF scale's values were equal or above 13.8.

The Teachers' whose TPSE scale's values were between 11.5 and 13.8 (between 25ths and 75ths percentile) were considered as having average TPSE level.

### Job Satisfaction Measurement Methodology

In order to measure teachers' job satisfaction, the TALIS 2018 uses composite scale T3JOBSA. For the purposes of this study, the authors did not use this composite scale but analysed the following items of the question: "We would like to know how you generally feel about your job. How strongly do you agree or disagree with the following statements?":

- The advantages of being a teacher clearly outweigh the disadvantages;
- If I could decide again, I would still choose to work as a teacher;
- I wonder whether it would have been better to choose another profession (the values of this variable were reverse coded);
- I enjoy working at this school;
- All in all I am satisfied with my job.

All items were coded in the Likert-type scale from "Strongly disagree" (1 point) to "Strongly agree" (4 points). All these items together are referenced as "Job satisfaction factors" further in the text.

### Collaboration Pattern Measurement Methodology

To measure teachers' patterns of collaboration, the TALIS 2018 used the composite scale T3COOP that was built from two subscales. For the purpose of this study, the authors used all items from both subscales in their data analysis. These items were part of a question: "On average, how often do you do the following in this school?":

- Exchange or develop teaching materials with colleagues;
- Discuss the learning development of specific students;
- Work with other teachers in this school to ensure common standards in evaluations for assessing student progress;
- Attend team conferences;
- Teach jointly as a team in the same class;
- Provide feedback to other teachers about their practice;
- Engage in joint activities across different classes and age groups (e.g. projects);
- Participate in collaborative professional learning.

All items were coded in the Likert-type scale with the following values: "Never" (1 point), "Once a year or less" (2 points), "2–4 times a year" (3 points), "5–10 times a year" (4 points), "1–3 times a month" (5 points), "Once a week or more" (6 points). The Cronbach-Alpha reliability coefficients for the T3COOP subscales varied from 0.56 for Sweden to 0.74 for Finland. All these items together are referenced as "Professional collaboration factors" further in the text.

In order to analyse professional collaboration patterns between teachers with high and low self-efficacy levels, the responses for all item values were recoded as follows:

- “Never” and “Once a year or less” recoded to 1 point;
- “2–4 times a year”, “5–10 times a year” recoded to 2 points;
- “1–3 times a month”, “Once a week or more” recoded to 3 points and called as “At least once a month” in the data analysis.

### Measurement Methodology of the Disciplinary Climate in the Classroom

As it was described in the literature review, the teacher’s self-efficacy is closely related with perceived disciplinary climate in the classroom. For this purpose, the authors included a scale “Teachers’ perceived disciplinary climate” (T3DISC) in the analysis that was built from the items of the question “How strongly do you agree or disagree with the following statements about this <target class>?” (<Target class> is defined as the first class that teacher taught in the week before participation in the survey on Tuesday after 11AM. If there were no classes on Tuesday, the teacher had to select a class that she or he taught on the day following that Tuesday):

- When the lesson begins, I have to wait quite a long time for students to quieten down;
- Students in this class take care to create a pleasant learning atmosphere (the values of this variable were reverse coded);
- I lose quite a lot of time because of students interrupting the lesson;
- There is much disruptive noise in this classroom.

All items were coded in the Likert-type scale from “Strongly disagree” (1 point) to “Strongly agree” (4 points). The Cronbach-Alpha reliability coefficients for the T3DISC scale varied from 0.86 for Latvia to 0.92 for Finland.

### Measurement Methodology of the Motivation to Teach

As some researchers relate self-efficacy to motivational factors, the authors chose to analyse teachers’ motivation to teach. There are three motivational scales in the TALIS 2018, the authors chose to report about teachers’ social utility to teach as this factor appeared to be most influential from all three. The scale “Teacher’s social utility motivation to teach” (T3SOCUT) was calculated from the items of the question “How important were the following for you to become a teacher?”:

- Teaching allowed me to influence the development of children and young people;
- Teaching allowed me to benefit the socially disadvantaged;
- Teaching allowed me to provide a contribution to society.

All items were coded in the Likert-type scale with the following values: “Not important at all” (1 point), “Of low importance” (2 points), “Of moderate importance” (3 points), “Of high importance” (4 points). The Cronbach-Alpha reliability coefficients for the T3SOCUT scale varied from 0.73 for Denmark to 0.84 for Sweden.

### Data Analysis Procedures

All data were analysed in IBM SPSS and IEA IDBAnalyzer using the TALIS 2018 Multiple Level/Population Teacher Weights. The results of data analysis represent population for each country.

### Results

To verify whether there are any correlations between selected job satisfaction, collaboration, classroom discipline and motivation to teach factors and TPSE, the authors performed correlation analysis (see Table 1).

As it is displayed in Table 1, the correlation between selected factors and TPSE exists. From factors that were selected to represent teachers' job satisfaction, the 5th factor correlates the most. The 1st and 2nd factor correlate with TPSE the most in Finland, followed by Lithuania and Estonia, the correlation of the 1st factor in Latvia is very small and is not statistically significant. The 3rd factor correlates the most for Latvian teachers followed by Finland and Sweden, this factor correlates negatively and is not statistically significant in Lithuania. The correlation with 4th factor is significant for all countries of comparison, the highest correlation is for Lithuanian teachers followed by Finland and Estonia.

The factors that represent professional collaboration significantly correlates with TPSE for all countries of comparison. The 1st and the 2nd factor correlate the most for the Baltic countries. The 3rd factor correlates the most for Lithuanian and Latvian teachers followed by Denmark's and Finland's teachers. The highest correlation for the 4th factors is for Lithuanian, Latvian and Finnish teachers.

The factor that represents teachers perceived disciplinary climate (D.F.) correlates significantly and negatively with TPSE, where teachers who strongly agree that they have disciplinary issues in the classroom have significantly lower TPSE than those teachers that do not report such issues. This factor has stronger impact in the Nordic countries than in the Baltic countries having the most impact in Denmark and the least impact in Estonia.

The social utility for motivation to teach is significantly correlated with TPSE for all countries of comparison. Correlation is the strongest in Finland followed by Estonia and Sweden.



*Table 1.* The Correlation of Teachers' Professional Self-efficacy (TPSE) with Factors that Characterise their Job Satisfaction, Motivation to Teach and Collaboration Patterns

Factor type	Country							
		Denmark	Sweden	Norway	Finland	Estonia	Latvia	Lithuania
Job satisfaction factors	1. The advantages of being a teacher clearly outweigh the disadvantages	0.09	0.16	0.16	0.26	0.19	0.08*	0.20
	2. If I could decide again, I would still choose to work as a teacher	0.09	0.13	0.15	0.25	0.21	0.15	0.21
	3. I wonder whether it would have been better to choose another profession	0.13	0.17	0.14	0.17	0.15	0.22	-0.04*
	4. I enjoy working at this school	0.13	0.10	0.15	0.23	0.19	0.17	0.24
	5. All in all, I am satisfied with my job	0.19	0.27	0.24	0.28	0.21	0.21	0.30
Professional collaboration	1. Professional collaboration in lessons among teachers	0.15	0.20	0.12	0.20	0.21	0.30	0.27
	2. Exchange and co-ordination among teachers	0.23	0.21	0.15	0.20	0.25	0.29	0.27
	3. Participation among stakeholders, teachers	0.14	0.10	0.08	0.13	0.12	0.24	0.26
	4. Teacher-student collaborative relationship	0.20	0.21	0.20	0.26	0.23	0.30	0.32
D.F.	Teachers perceived disciplinary climate	-0.34	-0.27	-0.33	-0.18	-0.11	-0.29	-0.26
M.F.	Social utility motivation to teach	0.16	0.25	0.18	0.27	0.25	0.24	0.21

M.F. – Motivational factor

D.F. – Disciplinary factor

\* not significant at  $p < 0.05$

The authors of this research created four liner regression models in order to analyse the linearity and calculate the explained variance. In all four models, the teacher's professional self-efficacy was dependent variable; independent variables are the described factors illustrated in Table 1. The results of these linear regression models can be seen in Table 2.

Table 2. Coefficients of Determination ( $R^2$ ) of the Linear Regression Equations from Factors in the Table 1

Country	$R^2$ Model 1	$R^2$ Model 2	$R^2$ Model 3	$R^2$ Model 4	$R^2$ Model 5
Denmark	0.05	0.10	0.12	0.03	0.20
Sweden	0.07	0.07	0.07	0.06	0.22
Norway	0.05	0.05	0.11	0.03	0.20
Finland	0.10	0.10	0.03	0.07	0.20
Estonia	0.07	0.11	0.01	0.06	0.18
Latvia	0.07	0.17	0.09	0.05	0.25
Lithuania	0.11	0.16	0.07	0.05	0.24

The linear regression equation Model 1 analysed linear relationship TPSE and job satisfaction factors (see Table 1). As it is seen in Table 2, overall, this model explains self-efficacy variation better in the Baltic countries than in the Nordic countries, in this case Lithuania has the highest explained variance – 11% of teachers' self-efficacy distribution.

Model 2 (see Table 2) analysed linear relationship between TPSE and teachers' professional collaboration factors (see Table 1). For Latvia and Lithuania this model explains the variation in TPSE the best, almost twice as for Estonian teachers. The Nordic countries have got medial explanation, on average – 15% from all variations of TPSE values.

Model 3 (see Table 2) analysed linear relationship between TPSE and teacher's perceived disciplinary climate in the classroom (see Table 1). This model works the best in Denmark explaining 12% of TPSE variation, but it explains only 1% of variation in Estonia; as it was already shown in Table 1 Estonian TPSE being the least impacted from the classroom disciplinary issues from all countries of comparison.

Model 4 analysed linear relationship between TPSE and teachers' social motivation to teach (see Table 1). As it can be seen in Table 2 – teachers' self-efficacy variation in Sweden, Finland and Estonia is better explained by social motivation to teach than in other countries, in Denmark and Norway this factor being the least.

Model 5 was created in order to analyse the linear relationship between TPSE and all factors described in Table 1. As it can be seen (in Table 2), this model explains on average 21% of variation of TPSE. The model works the best in Latvia, but in Estonia there are other significant factors that should be included in the model in order to explain variation of TPSE as good as in Latvia.

## Collaborative Patterns

To answer to the second research question, the authors of this article compared teachers with high and low TPSE levels. The first 4 patterns describe teachers' collaboration with students. The authors compared how many percent of teachers in each corresponding TPSE level strongly agrees that they have these teacher – student collaboration patterns. Next eight patterns describe teachers' collaboration with other teachers (see Table 3).

As it is seen in Table 3, there are many patterns of collaboration that differentiate teachers with high TPSE and low TPSE levels in every country of comparison.

More teachers with low TPSE than those with high TPSE strongly agree that when the lesson begins, they have to wait quite a long time for students to quieten down in all countries of comparison, except Estonia. Two to five times more teachers with high TPSE than low TPSE strongly agree that students in their classrooms take care to create a pleasant learning atmosphere. In all countries of comparison more teachers with low TPSE strongly agree that they lose quite a lot of time because of students interrupting the lesson than teachers with high TPSE. The same can be said about disruptive noise – in all countries of comparison, except Estonia, more teachers with low TPSE report disruptive noise than their colleagues who have high TPSE.

As it can be seen in Table 3, similar patterns of collaboration continue within teacher-teacher collaboration between teachers with low TPSE levels and high TPSE. More teachers with high TPSE than low TPSE reported practising all eight collaboration patterns at least once a month. Despite the difference between countries in both country groups being too diverse to unite them unambiguously under an umbrella of patterns in the Baltic countries or in the Nordic countries, several patterns can be distinguished. In the Nordic countries there are more teachers both with high and low TPSE who at least once a month: 1) teach jointly as a team in the same class, 2) provide feedback to other teachers about their practice and 3) exchange or develop teaching materials with colleagues than in the Baltic countries. In both the Nordic countries and the Baltic countries approximately 15% teachers with high TPSE engage in joint activities across different classes and age groups. In the Nordic countries, Estonia and Latvia both teachers with low and high TPSE discuss the learning development of specific students more than teachers with high TPSE in Lithuania. From all patterns more teachers with high TPSE almost two to three times often reported working with other teachers in their school to ensure common standards in evaluations for assessing student progress. There is very small difference between teachers with low and high TPSE in the Nordic countries in the pattern of conference attendance. The number of teachers attending conferences in Latvia are extremely low. As with the 1st and 2nd collaboration factor, the participation in collaborative professional learning is more common in the Nordic countries than in the Baltic countries.

*Table 3.* Percentage of Teachers with High or Low TPSE and Their Patterns of Teacher-Student and Teacher-Teacher Collaboration (%)

Factor	TPSE level	Denmark	Sweden	Norway	Finland	Estonia	Latvia	Lithuania
<b>Strongly agree:</b>								
1. when the lesson begins, I have to wait quite a long time for students to quieten down	low	5.6	7.9	4.6	8.3	1.8	5.6	7.0
	high	3.0	3.8	1.5	5.9	3.5	3.1	4.0
2. students in this class take care to create a pleasant learning atmosphere	low	9.8	6.9	4.3	7.6	7.0	6.1	8.1
	high	37.7	27.6	23.1	15.5	19.6	25.0	34.1
3. I lose quite a lot of time because of students interrupting the lesson	low	5.9	8.6	8.1	9.1	3.0	4.0	5.6
	high	3.2	3.3	2.5	4.0	3.1	1.0	2.6
4. there is much disruptive noise in this classroom	low	4.5	8.0	7.8	10.3	2.2	4.1	5.0
	high	2.4	4.1	2.2	5.9	3.0	2.6	3.3
<b>At least once a month:</b>								
1. teach jointly as a team in the same class	low	35.1	38.5	34.7	29.2	14.8	8.4	3.5
	high	40.8	45.7	43.1	38.7	26.6	26.3	7.8
2. provide feedback to other teachers about their practice	low	8.4	12.3	10.9	3.2	3.2	4.2	1.7
	high	17.1	18.0	13.3	9.7	7.2	14.1	7.8
3. engage in joint activities across different classes and age groups (e.g., projects)	low	10.2	9.5	5.0	5.0	4.8	2.9	2.2
	high	18.2	17.3	12.6	13.0	15.0	17.4	11.0
4. exchange or develop teaching materials with colleagues	low	53.0	52.1	60.5	34.4	18.2	20.4	15.4
	high	63.9	65.2	78.6	49.9	36.7	43.3	39.3
5. discuss the learning development of specific students	low	60.7	76.6	85.5	65.0	60.6	52.2	25.1
	high	78.0	88.7	91.0	79.7	80.3	74.7	49.5
6. work with other teachers in this school to ensure common standards in evaluations for assessing student progress	low	30.3	47.9	52.1	29.4	27.3	25.4	11.3
	high	53.0	68.6	70.2	46.4	55.1	57.4	34.0
7. attend team conferences	low	71.8	92.0	90.8	55.0	46.7	3.1	39.5
	high	76.8	94.0	95.1	64.1	66.7	8.4	55.8
8. participate in collaborative professional learning	low	11.9	35.0	36.2	5.0	10.0	5.9	6.3
	high	18.0	48.4	50.3	13.0	27.5	19.4	18.4

From the selected factors, Finland from the Nordic countries and Lithuania from the Baltic State countries show the least collaborative patterns, but Norwegian teachers with high TPSE show the highest collaborative patterns.

## Conclusions

As the data analysis displays, significant correlation and linearity exists between TPSE and selected factors, and there is a difference in collaboration patterns between teachers with high TPSE and low TPSE. As correlations and comparisons do not display causality, the authors of this research cannot deduce whether high TPSE causes the impact on collaboration factors or the collaboration factors cause impact on high TPSE, or both have mutual causation.

In the process of data analysis, the authors of this research discovered that in the TALIS 2018 between all countries of comparison, there was no significant difference in TPSE between gender, place of residence, and school type.

All in all, the mainstream difference between teachers with high TPSE and low TPSE were clearly displayed in Table 3, i.e., on average larger number of teachers with high TPSE were engaged in the selected collaborative activities at least once a month in comparison with the teachers with low TPSE, and there were less teachers with high TPSE that reported disruptive behaviours in the classroom than the number of teachers with low TPSE. Despite there was very high diversity in teachers' behavioural patterns and perceived classroom discipline, on average there were more teachers in the Nordic countries that showed collaborative patterns than the teachers in the Baltic countries.

As this research compared only teachers with high TPSE and low TPSE, i.e., top 25% and bottom 25%, 50% of data is not compared. It should be analysed in further studies, why such a large difference between countries exists. For example, why only 15.5% teachers with high TPSE reported that they strongly agree that students in their class took care to create a pleasant learning atmosphere whereas in Denmark 37.7% teachers with high TPSE reported the same, or why only 13% of teachers in Finland with high TPSE participate in collaborative professional learning at least once a month whereas 36.2% teachers with low TPSE in Latvia did the same.

This research contributes to the body of other studies providing evidence of teacher's self-efficacy in classroom management significance and the role of different patterns of collaboration. This research supplement previous studies that had identified social utility as being one of the most influencing predictors of teacher's self-efficacy.

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