Replacing the Mexican educational context with the Dutch educational context to explore self-efficacy among Dutch secondary school teachers: A Conceptual Replication of Cocca et al. (2018)

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Abstract

This study investigates teacher self-efficacy (TSE) among Dutch secondary school teachers, conceptually replicating Cocca et al. (2018), who examined TSE in Mexican pre- and primary school teachers. Understanding self-efficacy is crucial in the Dutch context given ongoing teacher shortages and its known role in teacher retention. This cross-sectional, survey based study used the Teachers' Sense of Efficacy Scale (TSES). Data was collected from 144 secondary teachers across the northern provinces of the Netherlands. THe data showed that Dutch teachers reported high levels of self-efficacy in general and in the 3 domains Instructional strategies, classroom management and student engagement. More experienced teachers and those teaching at higher academic levels (HAVO, VWO) reported stronger self-efficacy beliefs making teaching experience and school type significant predictors of self-efficacy. Gender and grade level (bovenbouw and onderbouw) were not significant predictors. Age as a variable was deleted due to high collinearity. Compared to Mexican teachers, Dutch teachers demonstrated comparable scores in instructional strategies but lower scores in classroom management and student engagement. These differences may be because of cultural variations, including higher individualism and lower power distance in the Netherlands. This study highlights the importance of contextual factors in shaping TSE and highlights the role of experience in developing teaching confidence in the Dutch educational context.

Inleiding

In recent years the Dutch education system has been put under pressure because of shortages when it comes to teachers. According to the Rijksoverheid (2025) the Dutch education system is suffering from a shortage of secondary school teachers especially in the more urban areas like the ''randstad'' ,a collection of the largest cities in the country. The retention and attraction of secondary school teachers has become a national priority. In this context, it is important to understand the psychological factors that influence teacher motivation and persistence. Identifying these factors could lead to valuable insights when it comes to teacher retention and attraction. It is very important to retain teachers as teacher retention inevitably impacts instructional quality, program coherence, and, thus, student achievement (Sorensen & Ladd, 2020). Self efficacy is one of these influential factors within teacher retention and attrition. When teachers experience a higher sense of self efficacy they are more likely to remain as a teacher (LaRose, 2024). However not much is known about the relation between SE and actual teaching performance (Tschannen-Moran & Hoy, 2007). According to Bandura's Social-Cognitive Theory (SCT), self-efficacy refers to "people's beliefs in their capabilities to produce desired effects by their own actions" (Bandura, 1977). These beliefs do not only influence behavior, but also motivation, emotions, and cognitive processes. Tschannen-Moran, Woolfolk Hoy, and Hoy (1998) further elaborated on Bandura's theory by suggesting that teacher self-efficacy (TSE) is not just a static concept but rather a dynamic belief system which is shaped by interaction with social and non-social contextual factors, such as classroom climate, feeling of (leadership) support, and student behavior. According to Tschannen-Moran and Hoy (2007) these beliefs are developed through four main sources. Which are mastery experiences, vicarious experiences, verbal persuasion, and physiological and emotional states. Mastery experiences are the most effective in teaching in strengthening self-efficacy, whereas repeated failures or stressful experiences can significantly undermine it (Bandura, 1977; Tschannen-Moran & Hoy, 2007). Moreover, Tschannen-Moran et al. (1998) emphasize that teachers' own judgments concerning their self-efficacy are highly related to

context and closely linked to their analysis of their teaching tasks. This means that self-perceived efficacy can vary strongly depending on the system and culture in which a teacher works. In highly structured systems with strong administrative support, teachers may feel more capable of managing classrooms effectively, but in systems with higher autonomy with less support teachers might feel less confident (Tschannen-Moran & Hoy, 2007). Moreover, a recent study by Golubtchik (2024) found that developing evidence-based teaching strategies and providing structured learning opportunities can significantly boost teachers' self-efficacy, with promising effects on long term retention and reduced teacher attrition. This makes self-efficacy incredibly interesting to research because it has the potential to counteract or at least contribute to the quest to solve the teacher shortages in the Netherlands.

Rationale for replication

Firstly let's address the importance of replication in general. As stated in the Open Science Collaboration (2015) "*reproducibility is a defining feature of science*". Only through consistent verification are scientific claims able to earn credibility and practical relevance. Replicating research in different contexts yields evidence whether a theory can be supported or falsified (Open Science Collaboration., 2015). Ioannidis (2005) found that many original findings are not as robust as initially assumed, with a significant portion yielding weaker evidence upon replication. In recent years a replication crisis has revealed deep shortcomings within academic research culture, highlighting the usage of questionable research practices ranging from messing with p-values to outright fraud (Erden, 2025). By performing replication studies, researchers can actively counteract these QPR's. Replication serves as a "quality check," ensuring that findings are not merely products of specific samples or specific contexts but are genuinely robust and generalizable (Open Science Collaboration, 2015; Ioannidis, 2005). The goal of this study is to conceptually replicate Cocca et al., (2018). The aim is to replace the Mexican educational context with the Dutch educational context to see if the findings from Cocca et al., (2018) can be generalized to other cultural and educational contexts. Differences when it comes to teacher training systems, classroom management norms, cultural expectations regarding authority and autonomy, and even linguistic factors may impact how self-efficacy is experienced and reported by teachers. Therefore the decision was made to do a conceptual replication in the Dutch educational context, this study does not only test the robustness of previous findings but also researches the extent to which cultural, systemic, and educational factors influence teacher self-efficacy. Moreover the targeted participants won't be primary school teachers but secondary school teachers. The reason for this change is to yet again change the educational context of Cocca et al., (2018) and test the robustness of the results achieved in this study. Moreover secondary education presents unique challenges that can strongly influence the experience of teachers. Research has shown that secondary school teachers often face higher levels of student misbehaviour, which is significantly related to decreased job satisfaction, decreased sense of self-efficacy and increased burnout symptoms (Vidic, Đuranovic, & Klasnic, 2021).

Given the importance of teacher self-efficacy in professional development and retention, it could be valuable to investigate whether existing findings hold across different cultural and educational systems. Furthermore teacher SE is known to influence motivation, adaptation to reforms, and long-term retention (Golubtchik, 2024). Studying SE in the Dutch educational context could offer valuable insights into the amount of SE teachers posses, and what influences SE within teachers . By conducting a conceptual replication in the Netherlands, this study contributes to the broader understanding of self-efficacy and its potential for the Dutch educational context.

Overview of the Original Study

The original study was published on march the 27th by the Arab World English Journal. The study was written by Michaela Cocca, Armando Cocca, Elizabeth Alvarado Alvarado Martínez and María Guadalupe Rodríguez Bulnes. The study aims to investigate the correlation between teachers' self-efficacy (SE) perceptions and their actual teaching performance amongst Mexican preschool and primary school teachers. The study examines whether teachers' self-perceived SE is in line with their observed classroom performance and the study identifies key predictors of SE. This assessment is done to gather further knowledge so the professional training program (PTP) can be applied. According to Bandura's (1977) Social-Cognitive Theory (SCT), the concept of SE is defined as "people's beliefs in their capabilities to produce desired effects by their own actions". Cocca et al., (2018) examined self-efficacy beliefs among Mexican teachers by using the Teachers Sense of Self Efficacy (TSES) to measure the amount of self efficacy teachers possess. Cocca et al., (2018) mentions Tschannen-Moran, Woolfolk Hoy, and Hoy (1998) whom proposed a three-dimensional model of teacher self-efficacy that reflects the complex nature of the teaching profession. This model includes Efficacy in Instructional Strategies (EIS), Efficacy in Classroom Management (ECM), and Efficacy in Student Engagement (ESE), each representing essential areas in which teachers evaluate their own capabilities. These domains are context dependent and can be strongly influenced by both the school environment, school conditions and individual experience. Emotional factors also play a significant role. Moreover feelings of success and enjoyment can boost self-efficacy, while high levels of stress or anxiety may undermine it (Bandura, 1997; Schunk & Pajares, 2009). The study by Cocca et al., (2018) offers a valuable foundation for replication, as it uses the TSES to explore how teacher self-efficacy relates to experience and contextual support.

Cocca et al., (2018) found that more experienced teachers (both medium-experienced and experienced) reported higher self-efficacy levels than teachers who were novices. However, despite higher self-efficacy, experienced teachers did not necessarily perform better in the classroom observations, highlighting a potential mismatch between perceived teaching competence and actual teaching competence. Furthermore, access to more resources was the only significant predictor of the SE of teachers, meaning teachers felt more competent when there were more context related resources (community support and leadership style) and material resources available.

The central research question guiding this study is: To what extent does self-efficacy correlate with demographic variables like gender, age, teaching experience, school type and school layer ("bovenbouw" and "onderbouw") among secondary school teachers in the Dutch education system? Given the problematic shortage of teachers in the Netherlands and the important role of self-efficacy in teacher retention, it becomes crucial to better understand which factors are associated with higher or lower levels of self-efficacy among teachers in the Dutch educational context.The next question is how does this relationship compare to findings from the Mexican context? By comparing results with those from Cocca et al. (2018) in Mexico, we can assess whether self-efficacy and its demographic predictors are specific to the educational context or more universally linked. This comparison helps us to understand how cultural, systemic, and educational differences might shape the way teachers develop and experience self-efficacy. Based on prior findings, it is hypothesized that teachers with more than five years of experience will report significantly higher self-efficacy than novice teachers. Additionally, School teachers who teach at VMBO levels will score lower on self efficacy than VWO or Havo teachers because of the more chaotic classroom environment. This claim is made on the basis that VMBO students' average motivation is lower compared to other levels of education according to Biemans et al., (2013) leading to more chaotic classrooms. And lastly, Dutch primary school teachers will on average score higher on self efficacy than Mexican school teachers. This is hypothesized due to the differences between the Dutch educational context and Mexican educational context and the

financial differences between the two countries granting the Netherlands a probable advantage.

Methods

This study is a quantitative, cross-sectional, survey-based conceptual replication of Cocca et al. (2018). The study is not a full replication because in the study done by Cocca et al (2018) teaching performance was observed which will not occur in this study due to a lack of resources. Additionally, the participants in the study done by Cocca et al., (2018) were primary school teachers. In this study the focus will be on secondary school teachers.

The theoretical construct measured is self efficacy and it will be measured by using a survey which consists of ad-hoc created demographic questions and the Teacher Sense of Self Efficacy Scale (TSES). The Teachers' Sense of Efficacy Scale (TSES) is a validated and peer-reviewed instrument developed by Tschannen-Moran and Woolfolk Hoy (2001) to measure teachers' self-perceived efficacy in three domains. These are instructional strategies, classroom management, and student engagement. There is a long form and a short form of the TSES. The long form consists of 24 items and the short form consists of 12 items. For this study the short form was chosen, because it was the most efficiënt option when it came to resources such as time available. The original TSES uses a 9-point Likert scale, but in this study, the decision was made to reduce the scale to a 5-point scale. Reducing the number of response categories bears the risk of a loss of variance and may lower internal consistency (as Cronbach's alpha is partly influenced by the number of scale points and the average correlation between items). In this case it was necessary to ensure accessibility and usability for respondents because the overlay when filling in the survey on mobile was very confusing.Using a 9 point likert scale would have been a bigger risk to this research than potential consistency issues. Luckily despite this change the overall Cronbach's alpha for the adjusted TSES in this study was .832, and for the subscales (management, strategy, and engagement), Cronbach's alpha was .815. These values indicate good internal consistency, suggesting that the scale remained reliable.

As mentioned, the targeted participants were secondary school teachers in the Dutch educational system. The data is collected among schools in the northern provinces of the Netherlands, specifically Groningen, Friesland, and Drenthe. In total 167 participants were gathered but due to an issue with qualtrics on the 27th may , the used online database to create and distribute the survey, participants couldn't access the Teachers sense of efficacy scale. 144 participants were included in the final statistical dataset. Schools in these regions were contacted directly by the researcher through calling to request coöperation in distributing the survey among teaching staff. The school contact information, including phone numbers, was obtained from the publicly accessible DUO database (Dienst Uitvoering Onderwijs, 2025). After obtaining permission, school representatives were sent an email containing the survey link along with an information sheet and an informed consent. The survey was administered online and the language used in the survey is English, as the instrument used (the Teachers' Sense of Efficacy Scale) is internationally validated in its original English form. So, the decision was made to use the English language to retain its trustability and integrity.

Data analysis was conducted with IBM SPSS Statistics. Descriptive statistics were used to analyze the demographic variables and compute mean scores for the Teacher Sense of Efficacy Scale (TSES) total score and the three domains: Instructional Strategies, Classroom Management, and Student Engagement. Internal consistency of the TSES was analyzed using Cronbach's alpha. To make categorical demographic variables (e.g. years of experience, school type, grade level taught) usable for regression analysis, dummy coding was applied. This was necessary because categorical variables cannot be directly included in regression models in their original categorical form. By creating dummy variables, each category can be separately compared to every reference group available which allows for clear interpretation of differences between groups. The reference categories

were selected based on what would be most relevant and practical for this research.. For example, novice teachers (less than 5 years of experience) were chosen as the reference group because they represent a key group whom are often the focus of teacher retention. Similar for school type, VMBO was set as the reference category since it is hypothesized to be the most difficult track to teach and is expected to vary from HAVO and VWO.

Regression analysis was chosen as a statistical method because it allows the analysis of each independent variable (e.g. age, experience, school type) while controlling for the effects of other variables granting more statistical power because the total variance of the dependent TSE variable is separated into parts that can be uniquely explained by each predictor. During this process, collinearity diagnostics (Variance Inflation Factor and tolerance) were checked to make sure that the predictor variables were not too strongly correlated with each other, which could otherwise distort the regression coefficients and give a false interpretation of the data. Additionally, between-subjects ANOVA was used to compare the means of TSES scores across groups based on demographic variables. ANOVA was selected because it has a great application to test for statistically significant differences between multiple independent groups at the same time (e.g. different school types or experience categories). Furthermore, interaction effects were explored to investigate if combinations of demographic factors (e.g. age and years of experience teached) had effects on self-efficacy scores, providing a more in depth understanding of how these variables work together in conjunction regarding self efficacy. The adjusted R^2 was used to evaluate model fit and explained variance. Adjusted R^2 provides a more accurate estimate of the proportion of variance explained by the model, accounting for the number of included predictors. All statistical tests were interpreted at a significance level of $p < .10$. In studies with smaller sample sizes, like this one, it is common to use a slightly higher alpha level to reduce the risk of Type II errors and make sure that potentially meaningful patterns are not overlooked.

Results:

Out of the 167 total responses collected, 144 responses were used in the data analysis. One participant was removed due to selecting the same response option (1) across all items, which indicated an invalid outlier. the respondent only ook 43 seconds time to answer a survey which approximately took 3 minutes to fill in. Additionally, 22 responses were lost due to a technical error in the Qualtrics survey system. The age distribution of the participants was relatively balanced. The largest age group was 34–45 years old (n = 41; 28.5%), followed by 25–34 years (n = 34; 23.6%) and 45–54 years (n = 31; 21.5%). The youngest (under 25) and oldest (55 and over) groups each represented by 13.2% of the sample (n = 19). In terms of teaching experience, almost half of the teachers had 11 or more years of experience (n = 68; 47.6%). The data for the rest were of the participants fairly evenly spread between 6–10 years (n = 39; 27.3%) and 0–5 years (n = 36; 25.2%). Regarding grade level taught, most participants reported working primarily in upper secondary grades (bovenbouw) (n = 69; 47.9%), while 36.1% (n = 52) taught in lower grades (onderbouw). A smaller group (n = 23; 16.0%) indicated they taught both levels equally. When asked about school type, 41 participants (28.5%) taught mainly at VMBO, 36 (25.0%) at HAVO, and 34 (23.6%) at VWO. Smaller proportions reported teaching across multiple levels: VMBO & HAVO (9.0%), HAVO & VWO (9.7%), and all three levels (1.4%)

Table 1

Demographic characteristics of the sample

Characteristic	N (144)	%
Age group		
Under 25	19	13.2
25–34	34	23.6
35–44	41	28.5
45–54	31	21.5
55 and over	19	13.2
Years of teaching experience		
0–5 years	36	25.2
6–10 years	39	27.3
11 or more years	68	47.6
Grade level taught		
Lower secondary (onderbouw)	52	36.1
Upper secondary (bovenbouw)	69	47.9
Both levels equally	23	16.0
School type		
VMBO	41	28.5
HAVO	36	25.0
VWO	34	23.6
VMBO & HAVO	13	9.0
HAVO & VWO	14	9.7
VMBO, HAVO & VWO	2	1.4

To assess the internal consistency of the Teacher Sense of Efficacy Scale (TSES), Cronbach's

Alpha was calculated for the 12 items and the 3 self efficacy-domains. The result was α = .832 for the total scale and α = .815 for the domains , indicating high reliability and internal consistency of the scale. Descriptive statistics for the three self-efficacy domains and the total TSES score are shown in Table 1. Teachers scored highest on Instructional Strategies (M = 3.66, SD = 0.57), followed by Classroom Management (M = 3.57, SD = 0.64) and Student Engagement (M = 3.15, SD = 0.64). The total self-efficacy score across all items was M = 3.46 (SD=0.53). Importantly, these scoressuggest that Dutch secondary school teachers report relatively above median standard levels of self-efficacy across all domains.When examining self-efficacy by school type, clear differences emerged as seen in Table 2 and Figure 2. Teachers at VWO level report the highest overall TSE score (M = 3.75, SD = 0.47), followed by HAVO (M = 3.58, SD = 0.42), and VMBO (M = 3.14, SD = 0.50). This linear pattern exists across all domains. Furthermore, when looking at teaching experience (Figure 1), teachers with 11 or more years of experience reported the highest TSES scores (M ≈ 3.90), followed by those with 6–10 years, and then 0–5 years of experience. For both teaching experience and school trend there seems to be a linear trend of more experiencing more self-efficacy when teachers are more experienced or teach a higher level of education.

Table 2
Means and standard deviations of TSE scores by school type (VMBO, HAVO, VWO)

School type	TSES Total M (SD)	Engagement M (SD)	Management M (SD)	Strategies M (SD)
VMBO	3.14 (.50)	2.79 (.62)	3.26 (.63)	3.38 (.60)
HAVO	3.58 (.42)	3.24 (.51)	3.69 (.60)	3.81 (.39)
VWO	3.75 (.47)	3.46 (.66)	3.85 (.53)	3.94 (.48)

Figure 1
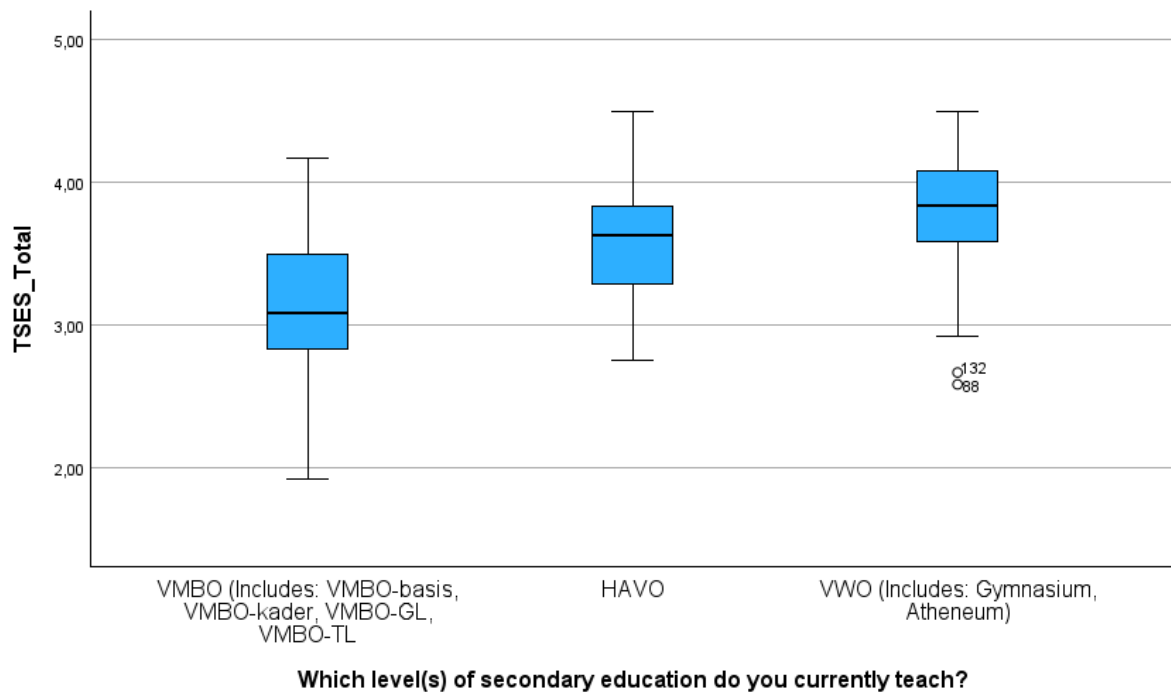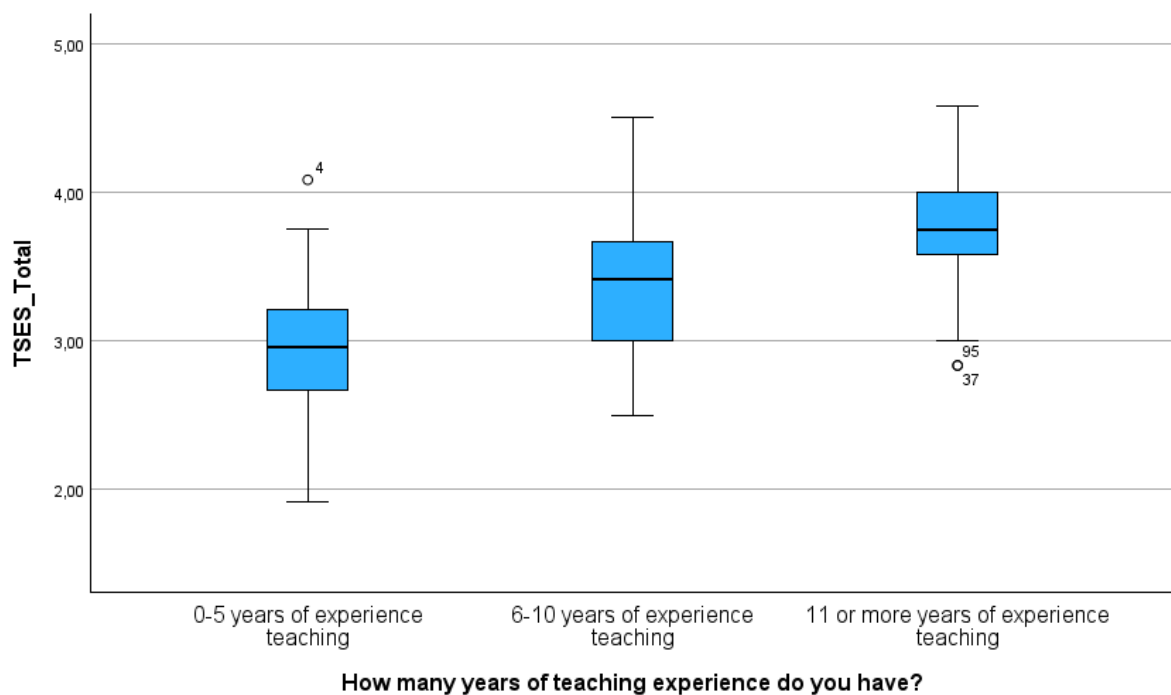*Distribution of total TSE scores by school type.*

Figure 2

Distribution of total TSE scores by years of experience groups

To explore the predictive power of the demographic variables on teacher self-efficacy (TSES), several regression analyses were conducted. The demographic variables used in this study were: age, teaching experience, school level (VMBO, HAVO, VWO), and grade level taught (onderbouw vs bovenbouw) were coded into dummy variables. Dummy variables were used because dummy coding allows for meaningful comparisons to a reference category in linear models, which is essential for valid interpretation in both regression and ANOVA frameworks. This makes the data more transparent and makes it more feasible to make distinctions between the data and how variables are influenced by certain trends like being more experienced.

During the initial stages of regression analysis, age was included alongside teaching experience. However, multicollinearity diagnostics revealed a high correlation between age and years of teaching experience. Specifically, Variance Inflation Factor (VIF) values for age dummies reached up to 6.79, and tolerance values dropped as low as .147 which can be seen in table 6. This is problematic multicollinearity. In the collinearity diagnostics table (table 3) more than two predictors had high variance proportions (> .50) on components with a condition index > 10, indicating severe collinearity problems which led to the exclusion of the age variable. Furthermore removing the age variable led to a slight drop in R^2. Given that multicollinearity inflates standard errors and can mask predicting effects, the decision was made to remove age from the optimal model. After excluding age, experience remained a significant predictor.

An additional between-subjects ANOVA confirmed the significance of experience ($F = 11.60$ and < .001) and school type ($F = 4.754$ and $p < .001$). The three-way interaction between experience, school type, and grade level was statistically significant but should not be taken seriously due to very low subgroup sample size. Small sample sizes can lead to unstable estimates and inflated Type I errors.

The overall regression model showed a strong fit, $R^2 = .750$ (Adjusted $R^2 = .583$), indicating that the demographic variables together were responsible for approximately 58% of the variance in teacher self-efficacy. When age was included in earlier models as shown in table 6, age would not be a significant predictor and experience would barely be predicted significantly for 11 years or more and 6-10 years of experience would not be a significant predictor. When age is removed from the dummy model Experience becomes very significant ($p < .001$) as seen in table 7. This highlights the importance of keeping track of multicollinearity in predictive modeling.

The overall regression model explained 43.0% of the variance in teacher self-efficacy ($R^2 = .430$, adjusted $R^2 = .414$) which indicates that the model has strong predictive value and gives insight in how TSE is shaped within Dutch secondary school teachers. The strongest predictor in this model is years of teaching experience ($p < .001$). This indicates that for each unit increase in experience, self-efficacy rises with .38 on the likert scale. Which is huge on a 5 point likert scale. The variable school type also showed a significant positive effect ($p = .005$) rising with .06 for every unit increase. The other variables (gender and grade level taught) did significantly predict self-efficacy increasing or decreasing because of their influence

Table 3
Collinearity diagnostics for predictors of TSE Total scores.

Dimension	Condition Index	Gender	Experience	Grade level	Schooltype	Age group
1	1.00	.00	.00	.00	.01	.00
2	4.61	.00	.02	.02	.72	.02
3	5.69	.02	.37	.01	.24	.03
4	7.48	.00	.05	.81	.00	.07
5	12.72	.57	.00	.14	.03	.04

| 6 | 16.01 | .95 | .03 | .03 | .01 | .83 |

Table 4

Regression coefficients predicting TSE Total scores without age.

Predictor	B	SE B	β	t	p
(Constant)	2.46	.16	-	15.10	< .001
Gender	-.04	.06	-.04	-0.64	.520
Experience	.38	.05	.60	8.39	< .001
Grade level	.03	.05	.04	0.59	.558
School type	.06	.02	.18	2.84	.005

$R^2 = .430$ (Adjusted $R^2 = .414$)

Table 5

Results of factorial ANOVA predicting TSE Total scores

Source	SS	df	MS	F	p
School type	3.33	6	.56	4.75	< .001
Grade level	.28	2	.14	1.20	.306
Experience years	2.71	2	1.36	11.60	< .001
Gender	.31	3	.10	.83	.459
School type * Grade level	.68	6	.11	.97	.454
School type * Experience	.27	2	.05	.38	.888

School type * Gender	.33	4	.08	.70	.594
Grade level * Experience	.22	4	.06	.48	.752
Grade level * Gender	.09	2	.04	.37	.693
Experience * Gender	.22	2	.11	.93	.399
School type * Grade level * Experience	1.78	3	.59	5.07	.003
School type * Grade level * Gender	.32	3	.11	.92	.434
School type * Experience * Gender	.02	2	.01	.09	.912

$R^2 = .750$ (Adjusted $R^2 = .583$)

Table 6

Regression table with dummies predicting total TSE scores with high collinearity and age variable

Predictor	B	SE B	Beta	t	p	Tolerance	VIF
(Constant)	2.744	.110		24.88	< .001		
Bovenbouw dummy	.159	.096	.150	1.66	.100	.555	1.801
Onderbouw_Bovenbouw dummy	.214	.126	.139	1.70	.092	.685	1.459
Dummy 25–34	.091	.150	.074	.61	.545	.307	3.262
Dummy 35	.228	.191	.185	1.19	.235	.189	5.225
Dummy 45	.252	.219	.203	1.15	.252	.147	6.790
Dummy 55	.465	.237	.318	1.96	.052	.174	5.751
Experience dummy 11+	.318	.186	.186	1.71	.090	.168	5.951

Experience dummy 6–10	.125	.145	.103	.86	.390	.321	3.117
Dummy VWO	.369	.098	.319	3.77	< .001	.634	1.577
Dummy HAVO	.317	.091	.281	3.48	< .001	.698	1.432

R^2 = .549 (Adjusted R^2 = .504)

Table 7

Regression table with dummies predicting total TSE scores without age variable

Predictor	B	SE B	Beta	t	p	Tolerance	VIF
(Constant)	2.773	.084		32.98	< .001		
Bovenbouw dummy	.194	.094	.183	2.06	.042	.579	1.726
Onderbouw_Bovenbouw dummy	.201	.124	.130	1.62	.109	.708	1.412
Experience dummy 11+	.547	.110	.516	4.98	< .001	.428	2.338
Experience dummy 6–10	.237	.113	.195	2.09	.039	.531	1.885
Dummy VWO	.435	.094	.377	4.64	< .001	.700	1.429
Dummy HAVO	.320	.088	.284	3.66	< .001	.764	1.309

R^2 = .526 (Adjusted R^2 = .498)

Conclusion and discussion

This study explored the self-efficacy (SE) beliefs of Dutch secondary school teachers and examined how these are shaped by teaching experience, school type, age, gender and grade level taught. Furthermore this study aims to compare the Mexican educational context to the Dutch context by conceptually replicating a study by Cocca et al (2018). The findings have shown that Dutch secondary school teachers perceive themselves as highly capable across the self-efficacy domains of instructional strategies, classroom management, and student engagement. Teachers with more years of experience consistently reported higher self-efficacy which supports the idea that mastery experiences, as theorized in Bandura's Social Cognitive Theory (1977), play a critical role in building self-efficacy over time. These findings also align with Tschannen-Moran and Hoy's (2007) findings which state experience strengthens efficacy beliefs. This relationship between experience and self-efficacy could be explained by the opportunity experienced teachers have had to test and find classroom strategies which work for them. As teachers practice over time, they develop routines and approaches that work best for their personal teaching style, which in turn enhances their confidence

and comfort in front of the classroom. Additionally, school type was shown to significantly influence self-efficacy beliefs. Teachers working at higher academic tracks, such as VWO and HAVO, reported significantly higher levels of self-efficacy compared to teachers at the VMBO track. This could be due to VMBO having more chaotic classroom environments and lesser motivated students as suggested by Biemans et al .,(2013) compared to the other school types. Furthermore, teaching in upper secondary grades (bovenbouw) was associated with slightly higher self-efficacy, potentially due to working with older, more independent students or ''bovenbouw'' teachers often being more experienced teachers. In contrast, gender and age did not significantly predict self-efficacy when controlling for experience.

Now it is time to compare this study's results to those of cocca et al., (2018). Firstly, important to note is that the TSES from Cocca et al., (2018) is a 9 point scale for which the results will be calculated back to a 5 point likert scale to make the results comparable. Compared to Cocca et al., (2018) Dutch teachers reported slightly lower total TSE compared to Mexican pre- and primary school teachers. When looking at the domains Dutch and Mexican teachers have comparable scores for instructional strategies, highlighting both groups feel comfortable applying instructional strategies. For both the Classroom Management and Student Engagement domains Dutch teachers scored noticeably lower compared to Mexican teachers (CM= 3.89 and 3.57) (StE= 3.81 and 3.15). The broadest contrast is VMBO teachers' sense of Student Engagement compared to Mexican teachers which is an average of 3.81 compared to 2.79. These findings can be better understood through the lens of Hofstede's cultural dimensions. The Netherlands scores low on power distance and high on individualism, which means that teachers are more autonomous and grant students more autonomy (Hofstede, 2011). Being more autonomous as a teacher could lead to a lower feeling of less support which can reduce self-efficacy, as suggested by Tschannen-Moran and Hoy (2007). Furthermore supporting autonomy of students could lead to a feeling of lacking control over your students. This can be a cause for the lower scores on student engagement because teachers in the Netherlands are more dependent on their students to engage because of the smaller power distance (Hofstede, 2011). On the contrary, Mexico's higher power distance and collectivist orientation may create stronger hierarchical structures and teacher authority within classrooms, which leads to more confidence in managing behavior and student engagement (Alqarni, 2022). In contrast to Cocca et al., (2018) who found that access to resources was the main predictor of self-efficacy, this study shows that teaching experience is much more important in the Dutch context which wasn't a significant predictor in Cocca et al., (2018). This fits with the more autonomous environment in the Dutch context. With more experience comes more confidence. It is easier to be autonomous when you are more experienced and used to dealing with making your classroom engage in your teaching.

All together, these findings provide clear answers to the research questions. Teaching experience and school type were both significant predictors of self-efficacy among Dutch secondary school teachers. Age and gender were not significant when controlling for experience. Compared to the Mexican educational context, the relationship between self-efficacy and experience was stronger in the Dutch sample. Furthermore, Dutch teachers in higher academic tracks reported higher self-efficacy than those lower tracks, confirming our hypothesis about VMBO teachers having to manage more difficult classrooms. Furthermore, as hypothesized, teachers with more than five years of experience showed higher self-efficacy levels than novice teachers, highlighting the essential role of mastery experiences as highlighted by Bandura (1977). However, against expectation, Dutch teachers did not report higher overall self-efficacy scores compared to Mexican teachers, especially in classroom management and student engagement domains, which may be because of cultural and systemic differences between the two countries.

Limitations

While this study offers valuable insights into teacher self-efficacy in the Dutch secondary

education context, several limitations must be acknowledged. First, the study was conducted only in the northern part of the Netherlands. This regional focus excludes the Randstad, which may have different school environments and teacher experiences because of the difference in population. Furthermore, the problem of teacher shortages occurs most in the Randstad. As a result, it is hard to generalize these findings to all Dutch secondary teachers. Another limitation is the change in the Teachers' Sense of Efficacy Scale (TSES), which originally was designed as a 9-point Likert scale, but in this study, it was adjusted to a 5-point scale to make it more readable on mobile devices. Even though internal consistency of the items was hardly affected, comparing results to Cocca et al., (2018) was difficult because they did use the 9 point score which meant averages needed to be recalculated to be compared. Furthermore, Differences in scale formats could impact how people interpret and choose their answers, so we need to be cautious when comparing the scores. Additionally, 22 cases were lost due to a technical error in Qualtrics on the 27th of may, which prevented respondents from completing the TSES scale. This could cause potential systematic bias as missing the respondents could have been influential in shaping the data because of their personal experiences. There are also a lot of unknowns which were not accounted for. Was there potential response bias? Did certain teachers not respond because the English language was used? Or were certain teachers not feeling motivated enough to fill in the form? There are also hidden variables which were not accounted for like teacher motivation. This variable could've measured if our participants were only intrinsically motivated teachers or if there were not so motivated teachers. The less motivated are a target group of retention because these teachers are most likely to stop (Golubtchik, 2024)..

Future research and implications

When building upon this research with future research the suggestion would be to conduct a longitudinal mixed-methods study that combines classroom observations with self-efficacy measurements. The most optimal way of researching this fenomena would be to let teachers fill in the TSES and then observe and grade actual teaching performance. This would be the moment of measurement. After this the teachers with the best teaching performance and highest self-efficacy scores will be singled out and a list of their ''good teaching practices'' get noted down and transformed into an intervention. This intervention will be applied to teachers with lower scores on self-efficacy and teaching performance. After the intervention is applied teaching performance and self-efficacy is again measured to see if the intervention benefits results. This research would allow us to study the relation between self-efficacy and teaching performance. Furthermore, via the observations we can actually observe the function of demographic variables in teaching because we can compare what ''good teaching practices'' come with experience and we can see what ''good practices'' work best for a certain school type. With this research we could influence and test the relations between context and teachers and get insight into what ''good'' and ''confident'' teaching should look like helping teachers to find their way.

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